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skin diver

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$39.95 Lycra Dive Skins

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 3321: Cross chest dive skin **Price $39.95**
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 3324: Dive Gloves ~~$12.95~~ pr. 8.95 pr. introduc. price.
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$99.95 1mm Neoprene Dive Suit

Fluorescent Lemon & Pink Stripes

Now you can have the benefits of a wetsuit while enjoying the comforts of a lycra dive skin. Available in black with fluorescent pink. Black with fluorescent lemon. Sizes: small, medium, large.
3326: 1mm neoprene dive suit ~~$159.95~~ $99.95 introd. price.

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skin diver

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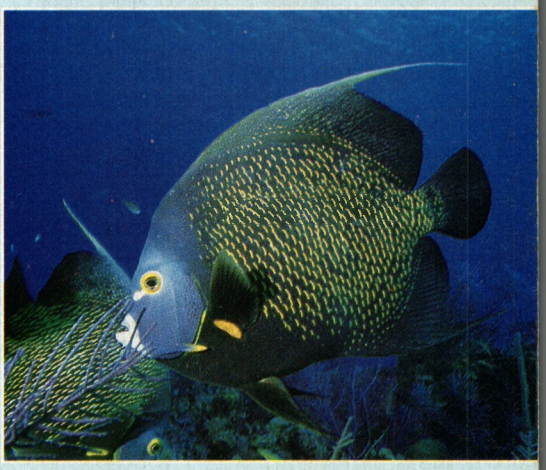
COVER

Tricia McFarlin models the new SeaQuest Explorer BC. For more on this see page 14. Photo by Bonnie J. Cardone.

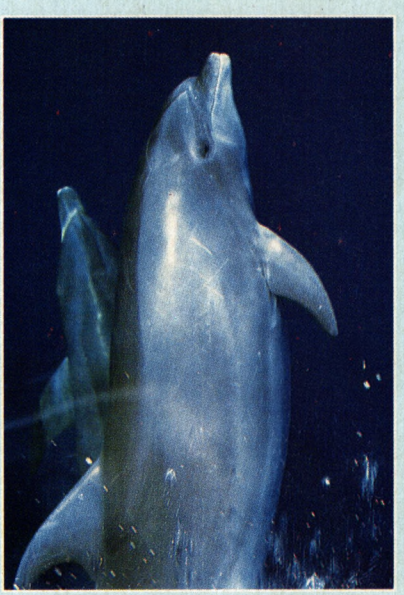
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Favorite among divers/Page 16



Leaders in dive charters/Page 59

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SDM EDITORIAL

By Bill Gleason

HAPPY NEW YEAR

A new decade of diving adventure is upon us. With the December issue, SKIN DIVER celebrated its 38th birthday. From its humble beginnings in December 1951, as a 16 page black and white magazine with a green cover, SKIN DIVER has grown into the largest and most widely read diving publication in the world. Our thanks go to both our long time readers, for their loyalty over the years, and those who have just joined us and are beginning 1990 as newly certified divers.

As diving has changed over the last 38 years, so has SKIN DIVER. Early issues carried no stories or ads on regulators or tanks since this equipment, if available at all, was manufactured by the divers themselves (using fire extinguishers, etc.). SKIN DIVER was primarily for spearfishermen (with a distinct emphasis on the men). Can you imagine a picture of a speared eagle ray gracing the editorial pages of SKIN DIVER today? It was done in 1954, before diving grew up and became conservation minded. Even today, we are often asked if we still support the practice of spearfishing, so vital a part of our heritage. Our answer is a resounding, but qualified, yes. SKIN DIVER supports spearfishing as a means of getting fresh seafood, as long as it's done in an environment where the fishing resource is naturally and annually renewed. The temperate waters of the U.S. offer game selection galore and prudent spearfishing does not damage the fish stocks. Commercial fishing interests (which account for more than 98 percent of the fish caught) cause far more damage than the occasional spearfisherman. So, even as we begin our 39th year, we haven't changed our fundamental philosophy and commitment, just qualified our position to reflect a maturity and awareness of our finite ocean resources.

While the size of SKIN DIVER has changed dramatically, our basic philosophy hasn't changed a bit. Each month, SKIN DIVER brings you all the current diving news, as well as up to date information on safety, education, medicine, dive travel hot spots in the U.S. and overseas. As the editor and publisher of SDM, it's a great source of pride that our staff (judged by your renewed subscriptions) does a pretty good job. But we lose sight of the source of change in diving and that's you, our reader, the recreational diver. While SKIN DIVER has changed its editorial focus frequently over nearly four decades, it is in response to a change in the diving habits of you, the consumer. You have a lot of power, most of it packed in your wallets. Your ability to buy products and travel services, as a collection of some 1.4-1.5 million active divers, has a profound effect on the development of new products and the continued, successful existence of traditional products. Last year, to reflect that power, Skin Diver changed its editorial coverage of diving products to make you, the ultimate diving consumer, aware of the changes in products that will let you dive more comfortably and safely. Judging by your letters, most of you applauded the change and asked for more of the same. Divers' fascination with diving equipment (our toys) continues to amaze me.

SKIN DIVER will continue its expanded coverage of diving products throughout 1990, without dropping a page of news, safety, education or travel coverage. As a guide to better dive consumerism, I offer the following tips:

The Bestseller Series examines a company's bestselling product in that category, figuring that if a majority of diving consumers buy that product and use it, that's a good endorsement for other divers as well. It's SKIN DIVER's role to present the facts and, when possible, make recommendations on using the equipment. It is *not* SKIN DIVER's job to tell you what to buy or what not to buy. You are too intelligent for that type of editorializing and are much better prepared to make your own decision based on personal diving experience. If you are a new diver, the Bestseller Series shows you what products other divers (we were all new divers once) prefer.

This year, we will add another category called New Products since, on occasion, a manufacturer has introduced a new product and it has become a bestseller immediately. To avoid that confusion, we'll let you know just what products are new and which ones have stood the test of time well. The SKIN DIVER staff tests all the products we review, topside and underwater, before including them in our editorial reviews. And, in response to the occasional question about "no negative reviews," my only comment is that if our staff doesn't think a product has merit, we don't review it, period. Our pages are far too valuable to fill them up with reviews of products you shouldn't buy.

Our Gold Medal series, probably better than any other product review in SKIN DIVER, reflects the power of you, the diving consumer. It also reflects the ability of dive manufacturers to gauge your interest in new equipment. Dive travelers, for example, have been complaining over the last couple of years that no manufacturer makes a lightweight, streamlined BC for warm water divers. Enough of you complained to me about it that I brought up the question of "How come no advanced diving equipment?" in my ongoing series of "Get the Lead Out" editorials.

This month's—1990's first—Gold Medal, is the BC many of you said you wanted. It's designed for traveling, warm water divers and is called the Explorer. It's a piece of advanced diving equipment, another option to keep you safer and more comfortable. SeaQuest, its manufacturer, is to be commended for the research and development commitment that was called for in order to accommodate diving consumers' requests.

As a result of this shift toward making equipment for advanced divers, SDM will also highlight those products we feel are for advanced, experienced divers. Advanced Diving Equipment, a part of our regular feature coverage, will be seen in future issues.

Listening to you, the diving consumer, is a good sign of the vitality of any business or industry. I encourage you to voice your opinions and back them up with your bucks. Drop me a line as well; if enough of you want to change something, I'm all for it!

To further assist you in finding the products you'd like to check out, which can, on occasion, be difficult, you'll also find a newly designed Diver's Directory, with certain manufacturers indicating where their good, stocking dealers are. I hope you'll find this section helpful in making your 1990 equipment selection.

And, above all, join me in a New Year's resolution: In 1990 I promise to dive more safely than I did last year. See you on the reef.



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SDMS

NIKONOS PHOTO COURSE



Lesson 1:

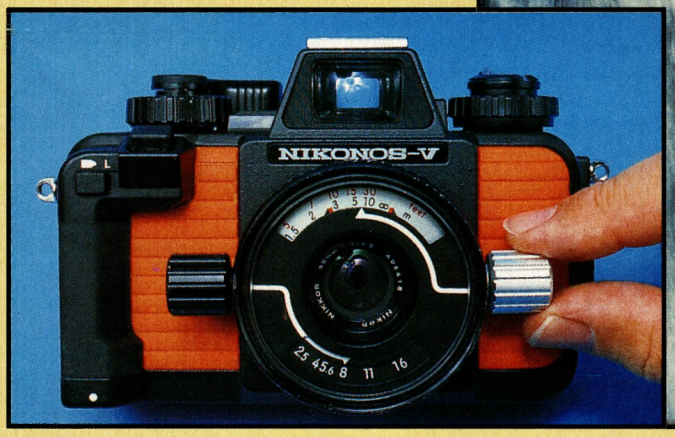
INTRODUCTION TO STANDARD LENS PHOTOGRAPHY

TEXT AND PHOTOGRAPHY BY GERI MURPHY

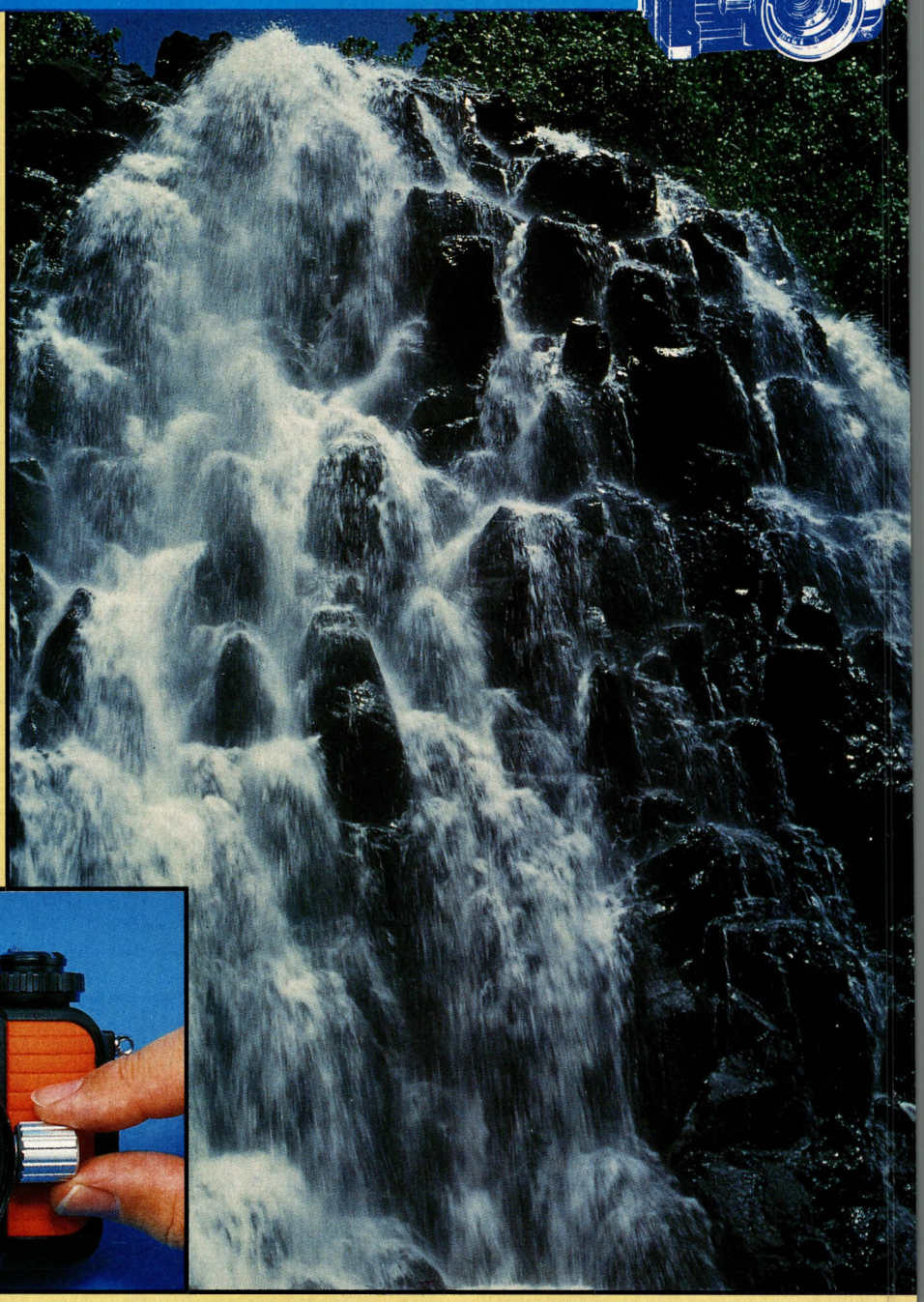
The most common form of underwater photography is standard lens: This is the lens that comes with the camera. There are far more standard lenses used underwater than any other type of Nikonos lens made to date. The standard lens also serves as the primary lens for macro and close-up attachments. It is a basic building block of the system.

28MM LENS APPLICATION

- Full frame photos of large fish
- Ideal for schooling fish photos
- Excellent for fish interaction photos
- Great for people close-ups
- Great for people/fish interaction photos



A Nikonos V camera with a 35mm lens.



A close-up of a waterfall taken with a 35mm lens.

STANDARD LENS BENEFITS

- No additional cost for accessories
- 35mm lens can be used on the surface or underwater
- Fills the gap between close-up and wide angle lenses
- Ideal for full frame fish photos
- Very effective for photographing shy fish
- 28mm is ideal for schooling fish photos
- Very effective for fish interaction photos
- Good for people close-ups
- Good for people/fish interaction

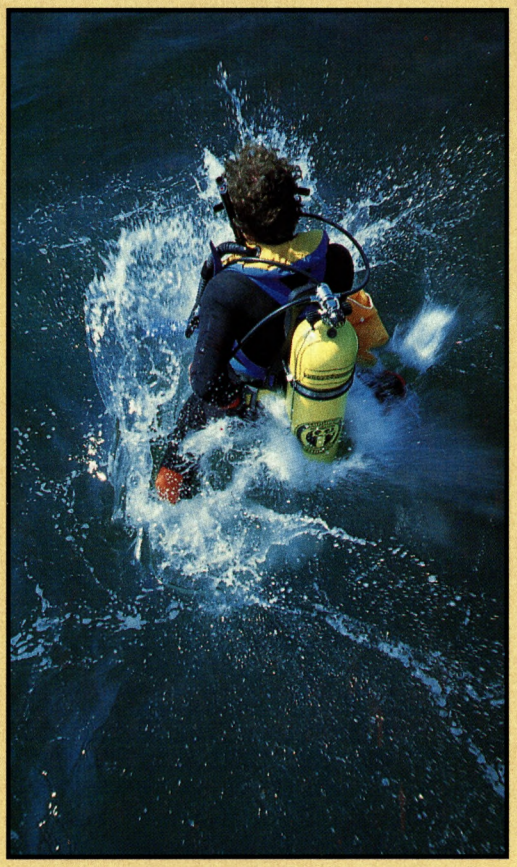
Ironically, the standard lenses are the most difficult ones to use underwater. They require considerable skill in estimating distances accurately. There is also greater chance for backscatter when using flash. Yet, when used properly, standard lenses produce outstanding results.

Nikon defines the standard lens category for Nikonos as encompassing both the 28 and 35mm lenses. Although the 28mm has a somewhat wider angle than the 35, both perform in a similar manner and require an equal amount of skill.

In normal land photography the 35 would be considered a wide angle lens, yet when used underwater it behaves quite similar to the way a standard 50mm lens does topside. In official Nikonos underwater photography contests the 35mm and 28 lenses are generally lumped together into the category, standard lens.

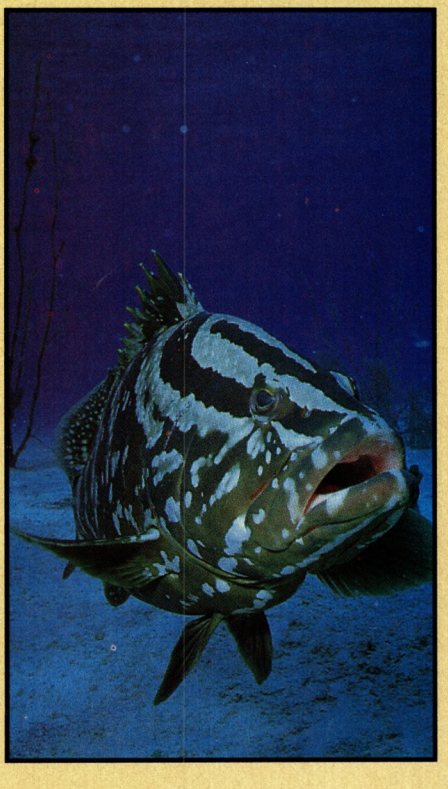
There are numerous benefits and advantages to using the standard lens. Here

Right: A school of fish photographed with a 28mm lens. Below: A diver's entry photographed with a 35mm lens. Bottom: A yellow coney photographed with a 35mm lens. Bottom right: A grouper photographed with a 28mm lens.







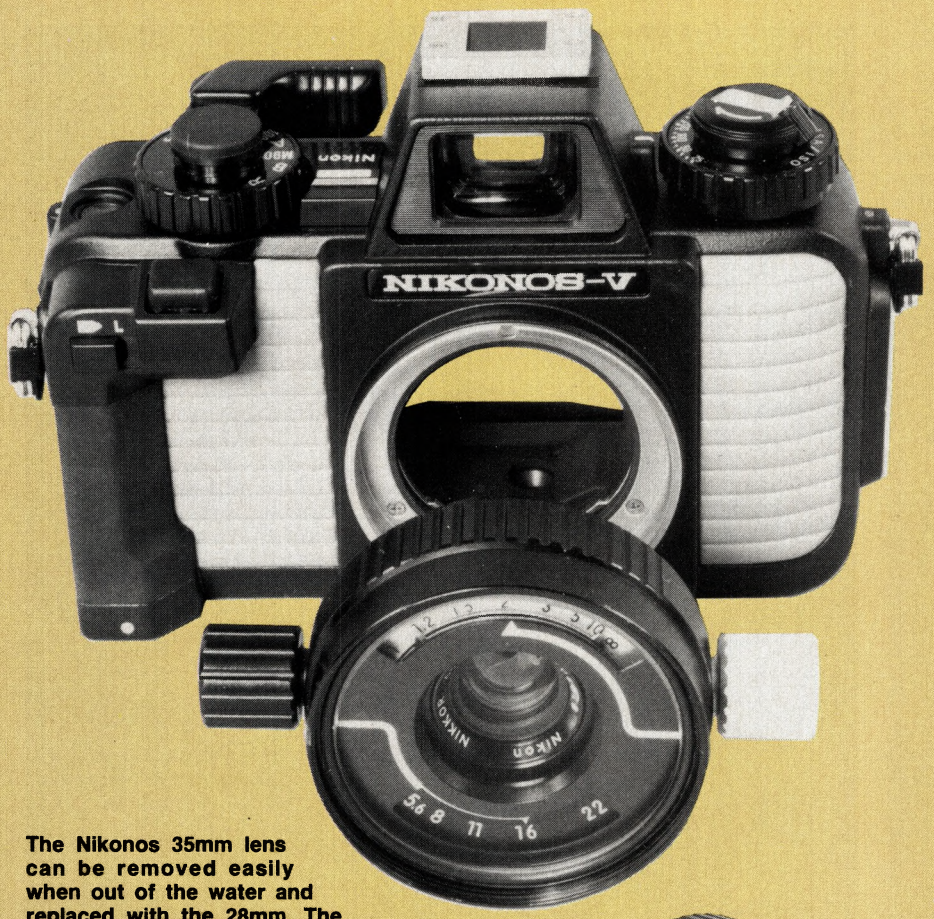


is a brief summary of the most important:

The standard 35mm lens is amphibious. It will operate both in air and underwater, thus allowing the greatest possible flexibility. When combined with the automatic TTL flash system of the Nikonos, the 35mm lens can produce excellent surface photos. It is particularly effective in the marine environment where spray or splashing would cause serious damage to a normal land camera. Underwater, the 35mm lens is especially effective when attempting to shoot full frame photos of shy fish or other marine creatures. The 35 allows you to fill the picture frame without

35MM SURFACE APPLICATION

- Water level shots of dive boats
- Photos of waterfalls taken up close
- Waterskiing photos
- Surfing photos
- Sailing photos
- Beach photography



The Nikonos 35mm lens can be removed easily when out of the water and replaced with the 28mm. The 35 and 28 are also the primary lenses for macro and close-up attachments.

getting too close to the creature.

The 28mm lens is the next step up from the 35. It is the least expensive of all Nikonos accessory lenses—one-half the cost of the 20mm lens. The 28 is strictly an underwater lens designed for a specific task. Because of this specialization, the depth of field is greater and the optics are sharper. Another advantage of the 28 is its minimum focus. It allows you to get 30 percent closer to the subject with its minimum focus of two feet. The specialization of the 28mm lens offers numerous benefits for standard lens photography.

In the coming lessons, we will discuss the secrets of successful standard lens photography underwater. We will show you how to make this aspect of Nikonos photography easy and fun.



The Nikonos 28mm lens (upper) and 35mm lens. When used properly, either lens will produce great results.

NIKONOS LENS CAPABILITY

Technique	Lens	U/W Angle	Accessory
Wide Angle	15mm	94 degrees	15mm viewfinder
	20mm	78 degrees	20mm viewfinder
Standard Lens	28mm	59 degrees	28mm viewfinder
	35mm	46 degrees	35mm viewfinder
Close-Up	28mm	59 degrees	Close-up Kit
	35mm	46 degrees	Close-up Kit
	80mm	22 degrees	Close-up Kit
Macro	28mm	59 degrees	1:2 extension tube
	35mm	43 degrees	1:3 extension tube
	35mm	43 degrees	1:2 extension tube
	35mm	43 degrees	1:1 extension tube

1990 SCHEDULE—NIKON SCHOOL OF U/W PHOTOGRAPHY

If you are interested in learning more about using a Nikonos underwater, you may wish to enroll in one of the many Nikonos seminars being offered this year:

Divi Tiara Beach—Cayman Brac

March 10—17	Amos Nachoum
April 28—May 5	Bill Gleason
June 2—9	Paul Tzimoulis/Geri Murphy
Aug. 11—18	Rick Frehsee
Sept. 22—29	Chris & Donna McLaughlin
Nov. 24—Dec. 1	Chris & Donna McLaughlin
Dec. 8—15	Scott Frier

Divi Flamingo Beach—Bonaire

Jan. 6—13	Amos Nachoum
April 21—28	Rick Frehsee
June 2—9	Stephen Frink
July 14—21	Amos Nachoum
Aug. 25—Sept. 1	Bradley Graham
Oct. 6—13	Scott Frier

Divi Bahamas Beach—Bahamas

Feb. 10—17	Frank Fennell
April 7—14	Scott Frier
May 19—26	Stephen Frink
July 28—Aug. 4	Rick Frehsee
Sept. 8—15	Amos Nachoum

Anthony's Key Resort—Roatan

Feb. 24—March 3	Rick Frehsee
May 19—26	Rick Frehsee
Sept. 15—22	Rick Frehsee

Marina Del Mar—Key Largo

June 23—30	Stephen Frink

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April 28—May 5	*Kona Aggressor*
July 14—21	*Bay Islands Aggressor*
Aug. 11—18	*Antilles Aggressor*
Oct. 13—20	*Belize Aggressor*
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Extension tubes are your entree to the fascinating world of macro photography. The set gives you a choice of three magnifications: half life-size (1:2), full life-size (1:1), and twice life-size (2:1). Which you can use to capture tiny marine life in spectacular, brilliantly colored photographs.

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Courses are offered throughout the year at several Caribbean dive resorts specifically chosen for their outstanding underwater photographic facilities. You'll be taught by top pros like Steve Frink and Rick Frehsee. And enjoy the unique opportunity to dive from the classroom into the water and immediately apply what you've learned.

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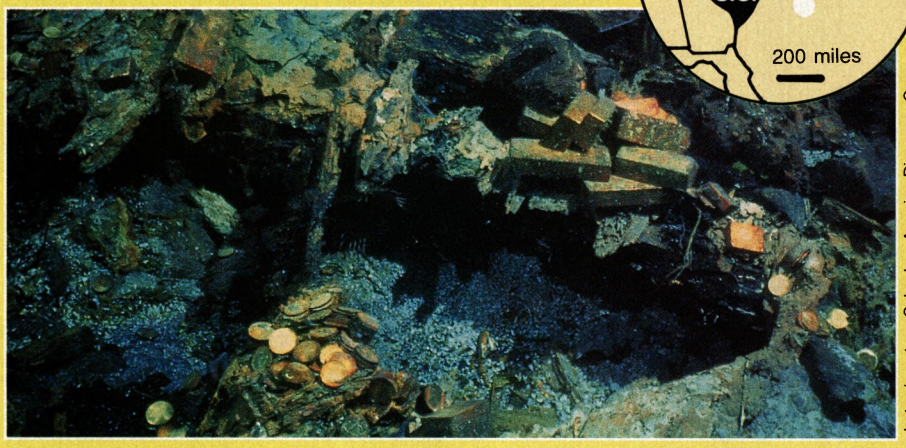
DEEP GOLD

SS Central America Found!

$450 MILLION AT 8000 FEET

BY E.R. CROSS

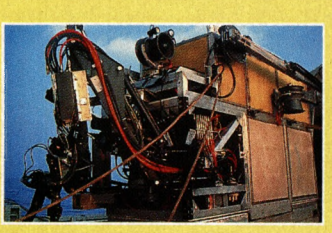




photos/courtesy Columbus-America Discovery Group

Above: This area of the wreckage is called the "Garden of Gold." Inset: The *Central America* lies under a mile and one-half of water about 200 miles off the Carolinas. Right: $50 gold pieces from the *Central America*. Bottom right: The ROV *Nemo*. Bottom left: Recovered gold. Opposite page: Gold bars and coins spill out of the remains of their wooden shipping boxes.





Gold was discovered at Sutter's Mill in January 1848. In a message to the 30th Congress in December 1848, President James Polk announced that the discoveries in California gold fields were more extensive and valuable than had been anticipated. Newspapers published the news far and wide. Talk of gold strikes at such places as Condemned Bar, Mormon Island, Dog Town, Poverty Bar and Murderers Bar fed the imagination of prospectors—and would-be prospectors. Like a plague, gold fever spread and miners flocked to the California gold fields by the tens of thousands.

In the ten year period 1848 through 1857 an estimated 400,000 prospectors, mostly men but a few women, flocked into the California gold fields. Of this vast number a few hundred became fabulously wealthy; a few thousand rich. Hundreds starved to death or were murdered. But the vast majority of hungry, dirty and tired propsectors averaged barely $1 a day at their pans and sluice boxes. The many thousands who barely survived simply considered the trip to the diggings a great adventure and told and retold their story of a search for riches; a search they would not have missed, gold or no gold.

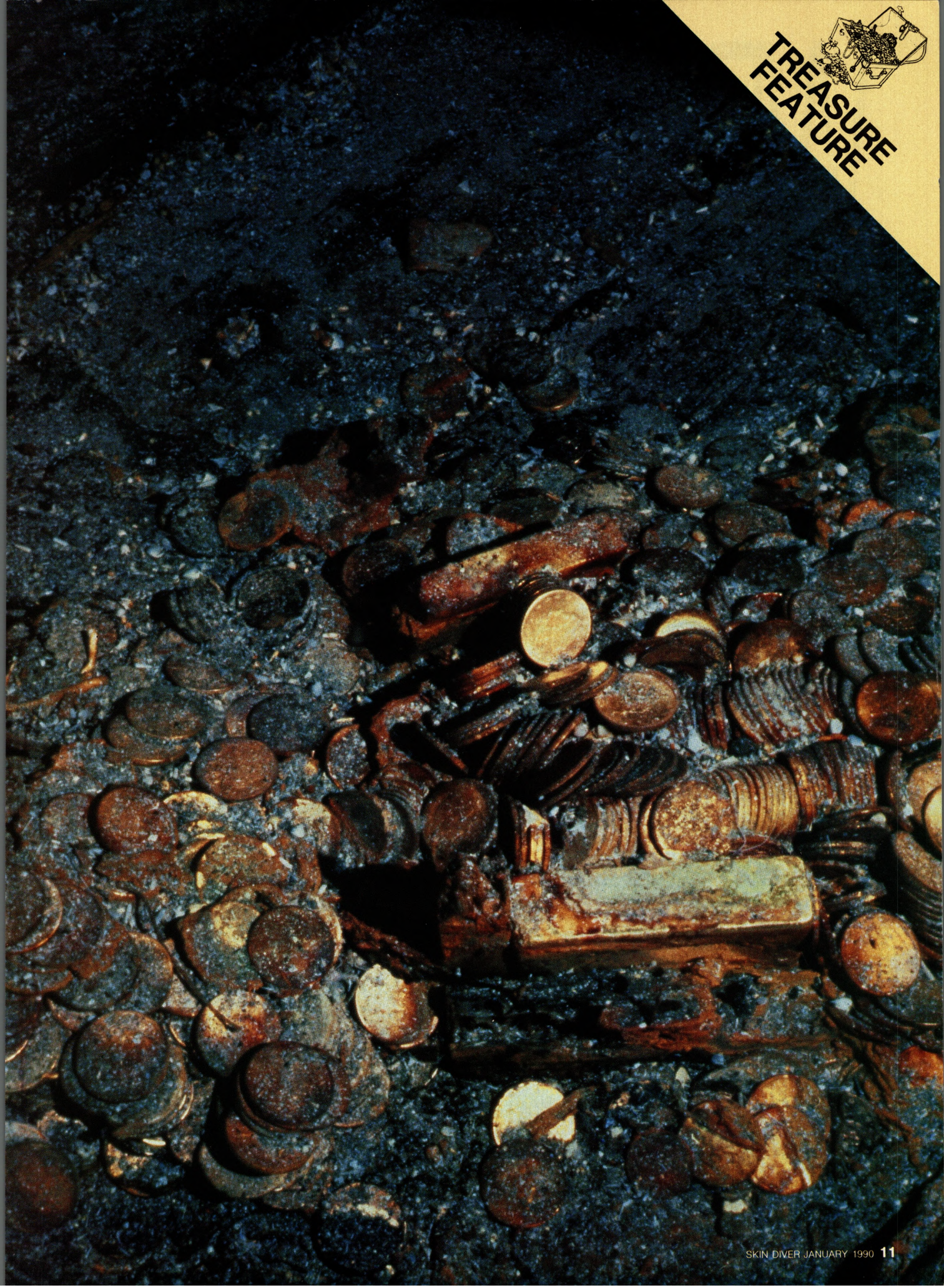
By 1857 the rush of 400,000 miners to California was over. The exodus was now away from the gold fields. In those few years gold production had totaled $450,000,000. A lucky few thousand men picked up their gold and departed the way they came, either overland or by sea. Sailing ships and steamers departed from San Francisco daily for the East via Panama or around Cape Horn and the tip of South America. The trip south to Panama took ten days to two weeks by steam vessel; up to two months by sail. Then there was the trip across the isthmus on foot, on the backs of mules or, in later years, via train. The final trip north to the their destination was by sail or steam vessel. Around "the Horn" to New York required many months of hardship on sailing vessels.



For those fortunate few who were returning from San Francisco with wealth, the luxurious sidewheel steamers plying the waters between Panama and New York were not only the most dignified way to return but the safest and quickest means of getting their great wealth back East. In addition to passengers, both newly gold-rich and those sailing below decks in steerage (whether wealthy or otherwise), the steamers carried mail, news, freight and, particularly, California's leading export; gold in all its forms.

In the 1850s one of the luxury side-

(Continued on Page 108)



TREASURE FEATURE

WRECK FACTS

CHICAGO'S MOST POPULAR DIVE

BY RICHARD C. DREW

"What's the most popular wreck in this area of Lake Michigan?" Ask that of a Chicago diver and you'll be told "the *Material Service* barge." It's marked by a red can buoy that's within sight of Calumet Harbor, sits upright in less than 35 feet of water and is practically intact!

HISTORY

Chicago was rapidly expanding in the late 1920s and the Chicago River was a major supply route for building materials. Part of this expansion included bridges and roads spanning the river. Henry Crown, chief executive officer of the Material Service Company, realized that because of the low clearance of these bridges, a special ship would be needed to haul raw materials to the expanding city. Raising a bridge meant lost time and money. Crown wanted a ship that could pass under these bridges without them being raised.

This motor barge, named the *Material Service* in honor of the company, was to be built to revolutionary specifications and would service Material Service's new Lockport facility. She was constructed from late 1928 to March of 1929 in Sturgeon Bay, Wisconsin at the Smith Shipyards. She cost close to $350,000 and was on a 10 year lease to the Material Service Company. The motorbarge was owned by Leatham, Smith, Putnam Navigation Corp. Putnam was also secretary/treasurer of Material Service.

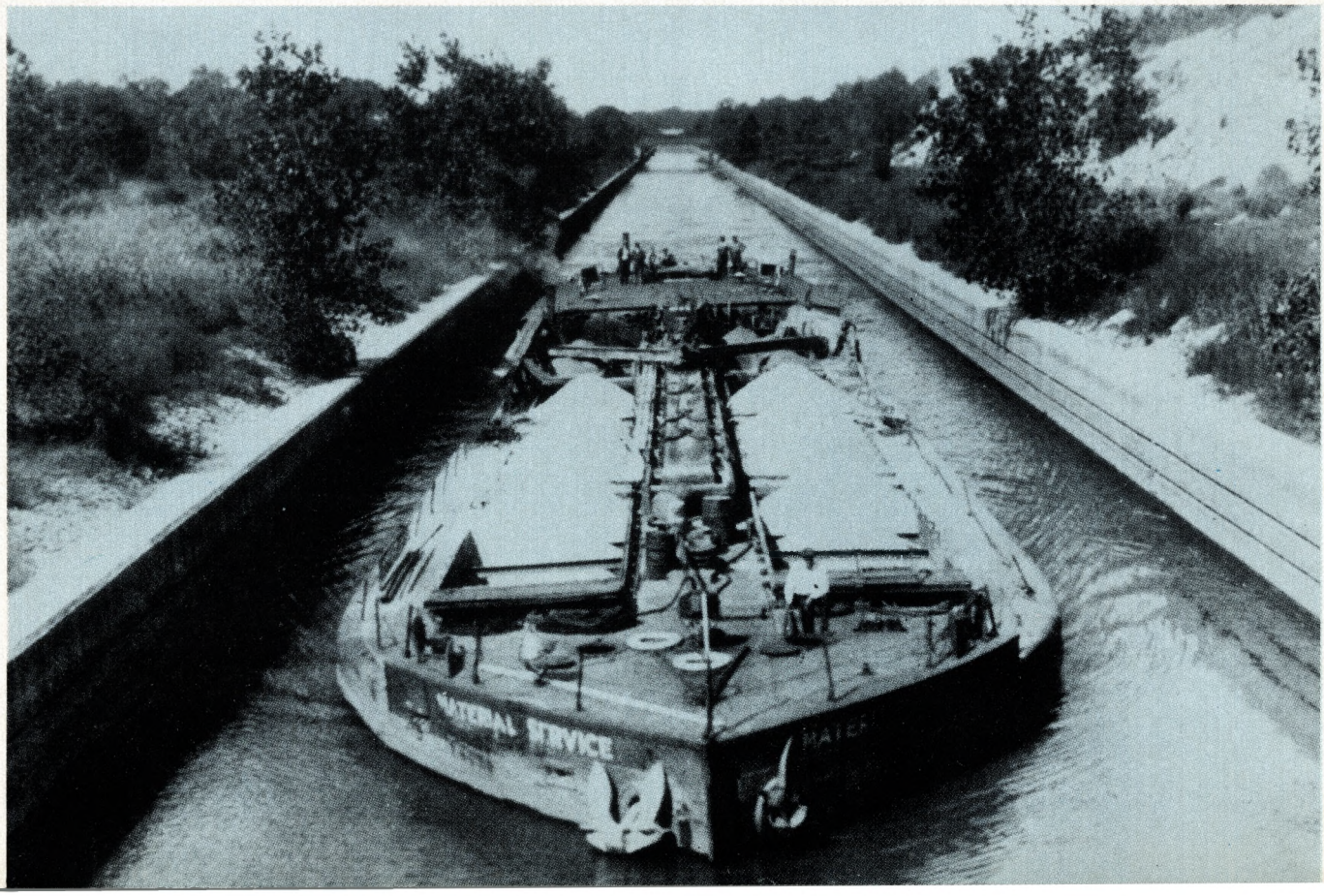
Just more than 239 feet long with a 40 foot beam and 13'10" draft, the *Material Service* would operate profitably for several years. Her deck was almost flat, giving the low profile needed to clear the bridges. Her maximum height from waterline to top was just 14'16". Her rudimentary superstructure extended just three feet above the deck. The pilothouse stood about a foot above this, just tall enough for the pilot and one other person to stick their heads in and see above the deck. It was often used as a seat.

A retractable A-frame hoisted the unloading conveyor off the deck. This system was an exclusive Putnam patent. With the A-frame lowered, a man standing on deck would be the tallest object on the ship. The *Material Service* so resembled a barge that, to look at her, you would never guess that she had crew's quarters and an engine room!

The unloading system was the heart of the ship and ingenious in its engineering. The erected A-frame would hoist the far end of the 90 foot long conevyor off the deck. The conveyor's aft end was attached to a hopper at the base of the A-frame. Cargo would be fed to the conveyor via the hopper, which in turn was fed by an inclined conveyor that hauled the cargo up from a hopper below decks. Sand and gravel were fed to this from the two tunnels that ran the length of the ship beneath the holds. Crescent shaped scrapers would drag the cargo through the tunnels, up an incline, to the hopper. The entire deck assembly—A-frame, hopper and conveyor—sat on a huge swivel that could be set to almost any an-

(Continued on Page 146)

The 239 foot long, low profile *Material Service* barge carries a load of gravel down the canal to the 92nd Street yard.



photo/courtesy Milwaukee Public Library

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SeaQuest Explorer BC



The Explorer is a lightweight, streamlined BC intended for those who travel and dive primarily in warm water. It is designed to minimize drag underwater.

photo/Bonnie J. Cardone

SKIN DIVER GOLD MEDAL SERIES

TEXT AND PHOTOGRAPHY BY BILL GLEASON

SKIN DIVER Magazine's Gold Medals are awarded for "significant innovation or invention" in diving equipment. The first company to earn this accolade in 1990 is SeaQuest, for the design and production of its new Explorer BC.

After experiencing a decade of "larger is better" BCs and those with enough buckles, straps, gizmos and features to require a separate certification course to dive with them, I had come to the conclusion that experienced divers were just not ever going to have a BC they could call their own. As a diver becomes more experienced, you see, the BC is not used as frequently as it is during training. When a diver has experienced hundreds of dives, particularly in warm water, he/she uses a BC primarily for surface flotation and, occasionally, on a deep dive.

Experienced divers faced a dilemma: If they didn't need or want 30, 40 or even 50 pound lift BCs, why did they have to wear them? And, while no one is questioning the essential logic of wearing a BC, experienced divers were searching for a lightweight, streamlined BC to replace those they were trained with.

SeaQuest, to nearly universal approval, unveiled the design of its new Explorer to the diving trade last fall and this BC appeared in dive shops just before Christmas. It is a radical departure from traditional design in several ways.

1. The Explorer is designed, like its name, for traveling divers who dive primarily in warm water. Advanced divers will be the first to appreciate its simplicity,

but new divers will like it as well.

2. The Explorer's capacity (19 pounds for extra small and small, 24 pounds for medium through extra large) is minimal. This is enough for any traveling diver, but much less than that of traditional BCs, even other SeaQuest BCs.

3. The Explorer is designed to minimize drag over a diver's chest, the area of resistance that produces the most fatigue for a swimming diver.

4. The Explorer borrows other outdoor technology (from backpacking) to solve problems of the topside distribution of tank weight.

I test dived the Explorer and then made another 30 dives in a row with it. It was the BC I had been dreaming about for a long time—well worth an SDM Gold Medal and worthy of every advanced warm water diver's consideration as well.

The first inkling you get that the Explorer is different is when you pick it up or pack it. You notice it's light and suddenly there's room for more gear in the dive bag than there was the last time. When you slip the Explorer on, it feels more like a suit vest than a suit jacket without arms (which is what many BCs feel like). When you adjust the cummerbund zippers (two different sizes on each side) to a dive snug fit, you feel well tailored and stream-lined.

After you've slipped the Explorer over a tank and stood up wearing it, be prepared for a minor shock. I was sure the tank I grabbed was empty, it felt very light. But, no, there was 3,000 psi in it. Then I realized I was standing straight, a very unusual position to be in with a tank on. (We've all seen divers wearing tanks, walking around hunched over.) The new BC design allows much of the weight to be borne by the hips and pelvis, just as it is with a backpack. That's a relief.

Underwater the Explorer worked like a Gold Medal product should. It had almost no drag at all and yet, when I wanted



The Explorer BC coordinates well with other dive gear and its attractive lines enhance models' appearance in U/W photos.

buoyancy, the Explorer handled it comfortably and easily. Since almost all of the buoyancy is centered on the back of the diver, it may take a minute or two to adjust to this change.

Is the Explorer perfect? No. I'd like to see a narrower cummerbund and I'd eliminate all air on the side of the BC as well (which is used only for surface flotation, when the BC is well inflated). But, the Explorer comes closer to my dream of being the perfect warm water BC than any other on the market right now.

The Explorer comes in hot colors. In addition to traditional black and royal blue, there's hot neon lime and raspberry. I could definitely wear the black or blue one and I'd try the lime, but I'm leaving the raspberry BC to the ladies. I'm not ready to go that far yet!

Another plus for the Explorer is that you show a lot more of your dive suit than with traditional BCs. So, if you want a sleek, professional diving model look, coordinate your Explorer with your dive suit.

Another plus for those who like to dive in just a bathing suit in very warm tropical water: The interior of this vest is made of neutrally buoyant foam and, coupled with the chest straps (which are also padded), you can dive easily and comfortably with no dive suit.

It took a long time for equipment manufacturers to wake up to the fact that some ladies, smaller divers and advanced warm water divers wanted a BC that was simple, streamlined and lightweight. SKIN DIVER would like to thank SeaQuest for leading the way with a new, innovative BC.

The Explorer just may be the BC design of the future, today. For the location of your nearest SeaQuest dealer check SDM's Diver's Directory. You'll find SeaQuest dealers highlighted there. If you can't find a dealer near you, call SeaQuest at (619) 438-1101.

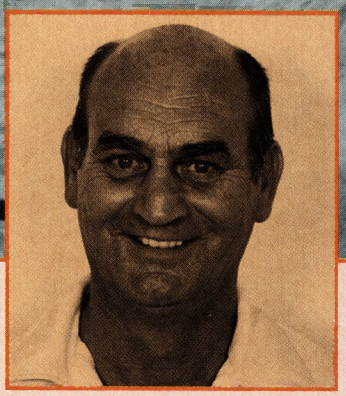
COMPARISON OF SEAQUEST BUOYANCY COMPENSATORS

Model	Price	Material	Shoulder Straps	Waist Straps	Inflator*	Overpressure Valves	Pockets	Backpack	Sizes/Lift	Colors	Comments
ADVi	$475	420 denier nylon	Yes, with double adjustable buckle	Suspension strap system, padded cummerbund	Inflate/ deflate, power or manual	One, at bottom right	Expandable	Adjustable, integral tank cradle	S–23 lbs. M–27 lbs. L–33 lbs. XL–52 lbs.	Black with white piping	All the extras except pockets not interchangeable.
Spectrum 4	$470	840 denier nylon	Yes, with double adjusting buckle	Suspension strap system, padded cummerbund	Inflate/ deflate, power or manual	One, at shoulder	Expandable, interchangeable	Adjustable, integral tank cradle	S–23 lbs. M–26 lbs. ML–30 lbs. L–40 lbs. XL–45 lbs.	Black, blue (with interchangeable pockets)	Heavy duty fabric and adjustable tank cradle.
Quickdraw	$420	420 denier nylon	Yes, with double adjustable buckle	Padded cummerbund	Inflate/ deflate, power or manual	One, at shoulder	Standard	Fixed integral tank cradle	S–23 lbs. M–26 lbs. ML–30 lbs. L–40 lbs. XL–45 lbs.	Black/ fluorescent lime Blue/ fireball red	Holds 20 pounds of releaseable weight. Holds 10 pounds of non releaseable weight.
Spectrum 3	$360	420 denier nylon	Yes, with double adjusting buckle	Suspension strap system, padded cummerbund	Inflate/ deflate, power or manual	One, at shoulder	Expandable, interchangeable	Fixed integral tank cradle	S–23 lbs. M–26 lbs. ML–30 lbs. L–40 lbs. XL–45 lbs.	Black, blue (with interchangeable) pockets)	Same as Spectrum 4 with lighter fabric and non-adjustable tank cradle.
Explorer	$310	420 denier nylon	No	Integral padded body harness, multiset waistband	Inflate/ deflate, power or manual	One, at shoulder	Standard	Soft backpack with lumbar support system	XS–19 lbs. S–19 lbs. M–24 lbs. ML–24 lbs. L–24 lbs. XL–24 lbs.	Black/blue/ fireball red Black/fluorescent lime/purple Black/raspberry orange***	Streamlined, low profile design.
Spectrum 2	$290	420 denier nylon	Yes, with standard buckle	Padded cummerbund	Inflate/ deflate, power or manual	One, at shoulder	Standard	Fixed integral tank cradle	S–23 lbs. M–26 lbs. ML–30 lbs. L–40 lbs. XL–45 lbs.	Black/blue/ purple Black/raspberry/ orange Blue/fireball red**	Fully featured, but without the "extras."

* The Air Source is optional on all models. **Some colors not available in some sizes.

DIVERS UNLIMITED

INSTRUCTOR COLLEGE



OFFERING A PROVEN PROGRAM OF CAREER DEVELOPMENT AND PLACEMENT

TEXT AND PHOTOGRAPHY BY GREG JOHNSTON

For more than 18 years divers have been enjoying the offshore reefs and wrecks of Ft. Lauderdale with Divers Unlimited. The courteous and competent staff, as well as the convenient and comfortable dive boats have made Divers Unlimited a favorite among traveling divers.

For almost an equally long period, Divers Unlimited has enjoyed a close working relationship within the dive industry as a leader in scuba education and instructor development. Not only is the staff dedicated to offering resort courses, open water instruction and dive specialty courses, but Divers Unlimited is among the oldest and most respected instructor development facilities. Divers Unlimited is also fully licensed by the State of Florida.

One of the most gratifying accomplishments a person can attain in a lifetime is to make an avocation a vocation. At Divers Unlimited, the infrastructure of the program allows candidates of every experience level to participate. The ability to turn your hobby into a career provides personal satisfaction and opportunity. Graduates of Divers Unlimited's Instructor College are in demand throughout the Caribbean and around the country.

Divers Unlimited is a Professional Association of Diving Instructors (PADI) Five Star Instructor Development Center. With sport diving at an all time high, dive travel growing steadily and the fact that more than two-thirds of all new divers are currently certified by PADI, PADI instructors are in demand. New technological developments in the dive industry, including computers and other equipment, require new training skills. Course work for instructor candidates is conducted in the classroom, pool and ocean; experience and knowledge gained are both theoretical and practical. The demand for professionally trained scuba instructors is greater now than ever.

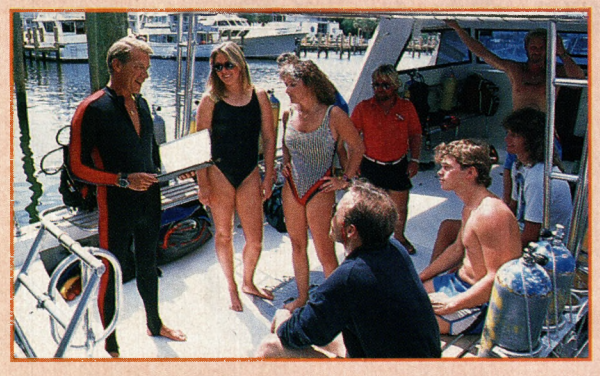
To find out how to get started as a professional dive instructor, SKIN DIVER visited Dave Inman, president and owner of Divers Unlimited. "What does it take to become a dive instructor," we asked.

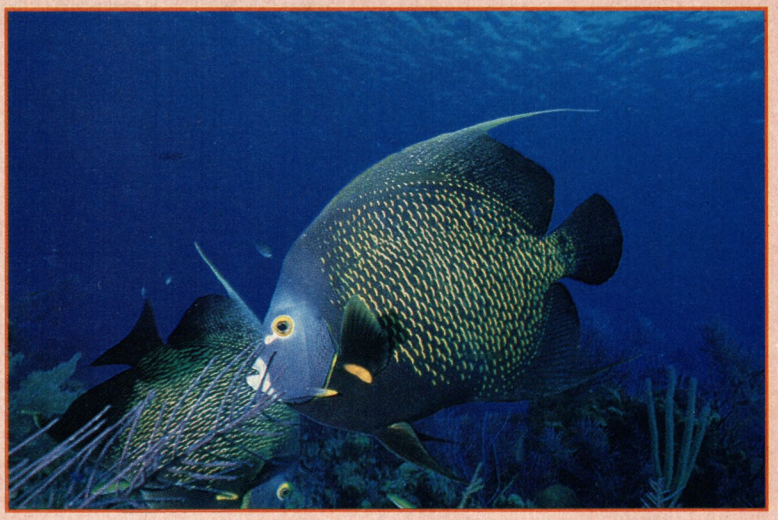
"The most important thing," Inman answered, "is . . . the willingness to work with other people. The days of grueling swim tests are over," he explained. "What we are teaching our instructor candidates to be is diving educators."

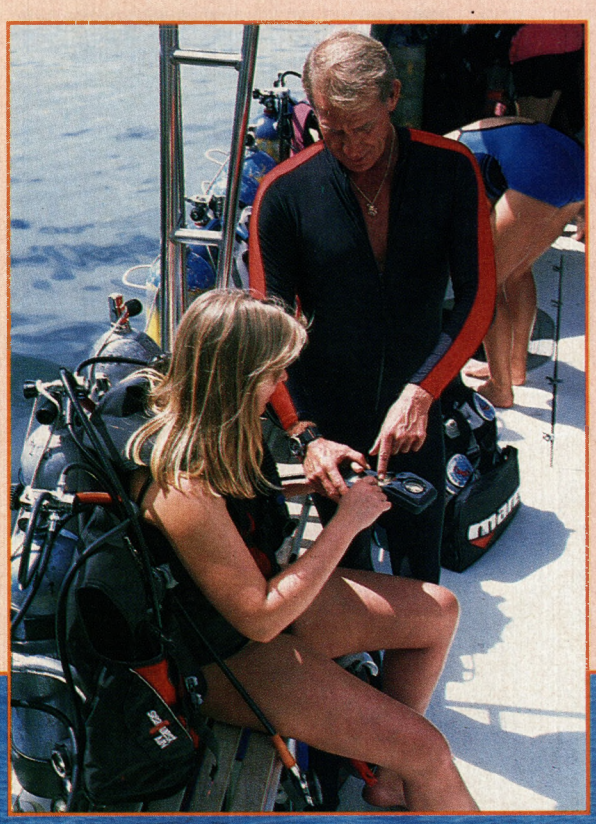
Over the years a tried and proven program has been developed at Divers Unlimited. One of the reasons is the close personal attention given the students. "The camaraderie among students is high," Inman told us. "Students arrive with all levels of experience, helping each other toward a common goal of being the most effective and comprehensively trained dive educator."

A unique service offered by DU is free job placement. Last year alone, Divers Unlimited graduated several hundred instructors and had more than 400 job

(Continued on Page 38)









Divers Unlimited is a PADI Five Star Instructor Development Center. Over the years it has developed a tried and proven program. The success rate of DU instructors is significantly higher than the national average. Opposite page, top: A Divers Unlimited pool session. Opposite page, inset: Dave Inman. Clockwise from left: A helping hand; an instructor class; a French angelfish; underwater photography; the *Diversion*.



WEST COAST WRECKS

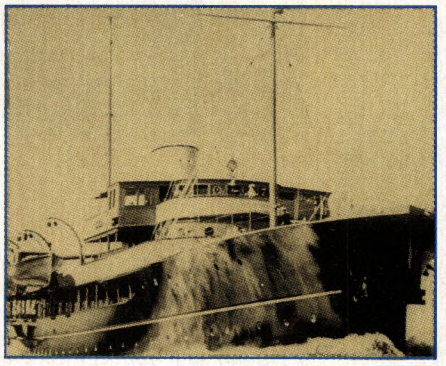
CATALINA'S VALIANT

TEXT AND PHOTOGRAPHY BY BONNIE J. CARDONE

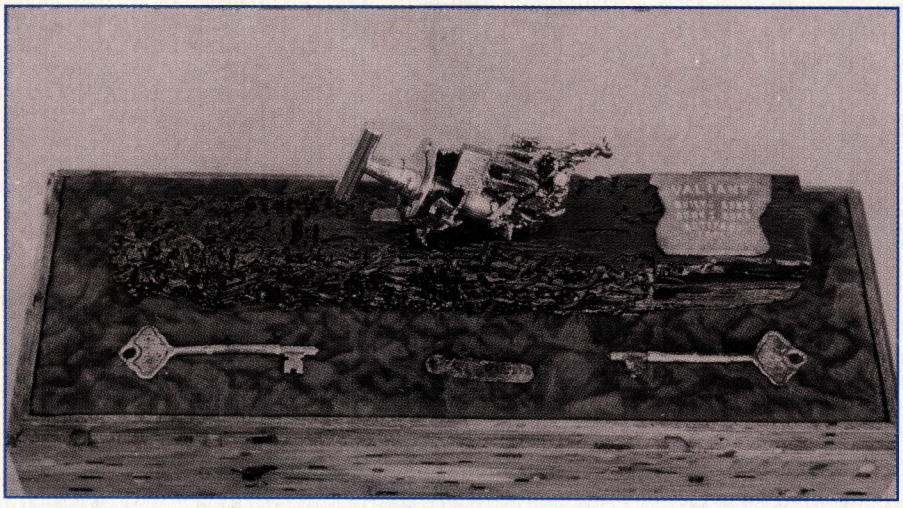
It was less than two weeks before Christmas in 1930. The motor yacht *Valiant* was at anchor in Descanso Bay, just west of the little town of Avalon, Santa Catalina Island, California. Aboard the 162 foot long luxury vessel for a weekend pleasure cruise were her owners, Mr. and Mrs. Charles S. Howard of San Francisco, several guests and a crew of 22.

While the passengers enjoyed cocktails and dancing, the kitchen crew was busy with dinner preparations and other crew members were playing cards. Without warning, the lights on the yacht flickered and went out. One of the card players immediately ran to the engine room, were he discovered the problem: The generator was out of gas. The man opened a valve to let gas into the empty tank, restarted the engine and went back to his card game. The valve was supposed to be turned off once the tank was full, but it wasn't. As a result, gas soon spilled onto the floor of the engine room. A spark ignited it at 7:50 pm.

A tremendous explosion rocked the ship and the midships erupted in flames. Howard hastily escorted his guests to the bow and helped them into one of the *Valiant*'s launches, which quickly motored away from the burning vessel.







The luxury motor yacht *Valiant* lies in 90 feet of water in Descanso Bay, Catalina Island. Above right: Every inch of the wreck's steel hull is covered with marine life. Above: The heat from the fire that caused the sinking melted metal objects together.

M/Y VALIANT SPECIFICATIONS

Date/place launched	March 20, 1926 Newport News, VA
Date/place sunk	December 17, 1930 Santa Catalina Island, CA
Length	162'3"
Beam	26'
Gross tonnage	444
Engines	2, Winton 950 hp diesels
Cruising speed	16 knots
Cruising range	5,500 miles
Hull material	Steel
Cost when built	$750,000

Hearing screams, Howard ran to the galley, where he found his Filipino baker trapped in an 18 inch gash in the deck, his clothes aflame. Howard put out the flames and pulled the baker to safety.

There was a second explosion. Crew members who had jumped into the bay were rescued by various other boats and by the harbormaster, who was on his way to the *Valiant*. The harbormaster had decided to tow the burning vessel out of Descanso Bay where it threatened to set other vessels, moored around it, on fire. This plan, however, failed. The *Valiant* was under tow when a line securing her port anchor burned through. The anchor plummeted to the bottom, anchoring the ship. Then, a third explosion occurred. The harbormaster thought better of his plan and returned to Avalon posthaste.

Eight thousand gallons of diesel fueled a fire that raged for three days. When it died out on December 17, the steel hull plates, cooled by the surrounding sea, shrank and water rushed in. The *Valiant* sank to the bottom, 90 feet below.

Since newspaper accounts of the sinking estimated that $75,000 in cash and gems (including Mrs. Howard's pewter jewelry box, said to contain $67,000 in diamonds) had gone down with the *Valiant*, many attempts were made to salvage the yacht over the years. Mel Fisher, then owner of Mel's Aqua Shop in Redondo Beach, is said to have brought up one of the ship's bronze propellers. Bob Bell and his group of divers brought up the other in 1955. In 1957 this latter group spent more than four months looking for the diamonds. They brought up seven and a half tons of brass and

bronze, removing the wreck's superstructure and most of its main deck in the process. These divers found a number of Good for One Drink tokens (used by *Valiant* guests while in Avalon and redeemed by Howard later) but no precious stones. Indeed, if the diamonds have been found their discovery has been a very well kept secret.

Other prized artifacts have been recovered by sport divers. In 1967 the *Valiant*'s gold commissioning plate was brought up and, in 1973, a brass step plate with the vessel's name on it was found. Many drink tokens and small brass valves have surfaced. Because of the fire's intense heat, it has not been unusual to find clumps of metal and glass melted together. Once the obvious items were salvaged, divers began bringing up less sought after "goodies." The *Valiant* had 13 tiled heads and chunks of tiles have been recovered. With the uncertainty of the state's stance on the taking of shipwreck artifacts today and the fact that the *Valiant* is now nearly 64 years old (some have defined as "historic" any wreck more than 50 years of age), divers would be well advised not to take anything .

DIVING THE VALIANT

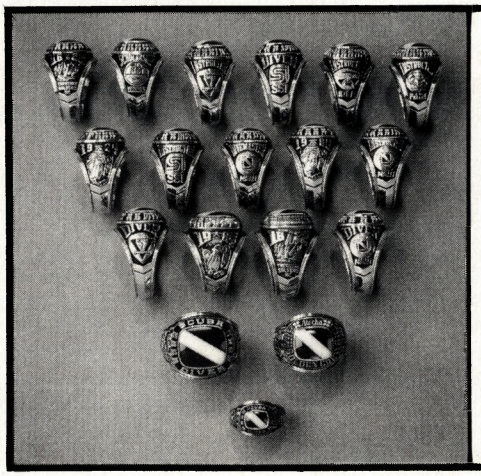
The *Valiant* was my very first wreck dive ever in the late 1970s. At the time I was a game hunter, not a photographer. I toured the wreck easily on one dive and found it boring. There didn't seem to be much there. That, plus my club deciding it was a dangerous dive because what was left of the superstructure was collapsing, kept me from visiting the wreck again until 1981. By then I was into photography and also knew how rare semi-intact wrecks are in California waters. What I wouldn't give now to have pictures from my first visit!

The *Valiant* is usually dived from a boat and is easy to find with a fathometer because it is a high profile object on a flat, sandy bottom. It is best visited between October and May. That's because Avalon is extremely busy during the summer months and boat traffic in the area is very heavy. Many boaters do not know what a divers down flag means; sometimes they speed over to a boat flying it to find out what is going on!

The *Valiant* is also an easy beach dive, day or night. Quite a lot of divers come over to Avalon for a day on a Catalina Cruises or Catalina Express boat and dive the underwater park at Casino Point. According to Dennis Graver, finding the *Valiant* from the beach is easy. Divers should leave the shore from the extreme left side (as you face the ocean) of the marine park, which is defined by buoys and a line. Stay right in between the second and third buoys as you reach the park boundaries, then swim 100 feet beyond them and descend. The *Valiant*

(Continued on Page 134)





DIVE RINGS BY

JOSTENS

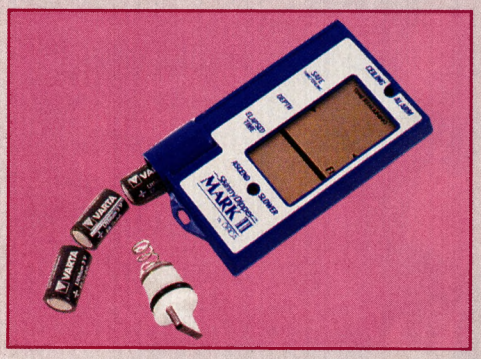
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SKIN DIVER MAGAZINE
1990
Bestseller Series
DIVE INSTRUMENTS

Orca's MkII

THE BIGGEST SELLING DIVE COMPUTER IN AMERICA





The Mark II multi-level dive computer fits in the palm of your hand and weighs only 5.5 ounces. It can be worn on your wrist, attached to the pocket of your BC jacket or mounted on the high pressure hose of your instrument console. Above: The Mark II is powered by three lithium batteries. It incorporates a threaded battery compartment door for a positive seal.

TEXT AND PHOTOGRAPHY BY GERI MURPHY

Despite the avalanche of new multi-level dive computers, Orca Industries has been able to maintain its lead, the SkinnyDipper series is America's biggest selling dive computer. And, today, the SkinnyDipper Mark II is selling in greater numbers than ever before.

Obviously, Orca has done something right in order to command this type of product loyalty. The company had a built-in advantage since it was the first to develop and introduce a multi-level dive computer (the Edge) in early 1983. But today, practically every major diving equipment manufacturer offers its own line of computers and Orca's Mark II must stand on the merits of the product—not past history.

In May of 1987 Orca introduced the original SkinnyDipper—the first low priced, ultra-compact dive computer for the sport diver. It was a bold move for a small company and was received with great enthusiasm. Orca started pumping out SkinnyDippers like cupcakes.

But, just as sales hit their zenith, Orca began experiencing product problems. Some SkinnyDippers leaked. Orca engineers finally traced the problem to the battery compartment door—a spring loaded bayonet locking device with an O-ring seal. The door and the O-ring seemed fine but the cylindrical housing could be slightly out of round.

Orca made good on the leaky SkinnyDippers, replacing each with a brand new model. But, the company was uneasy about this problem and so it was back to the drawing board for an entirely different

design. The bayonet style lock was eliminated, and replaced with a threaded battery compartment door that screws in for a more positive seal. The result is the Mark II—a better, more reliable dive computer at a competitive price.

What makes the Mark II so popular? A lot of credit goes to its compact, thin line design. It fits in the palm of your hand and weighs only 5.5 ounces. It can be worn on your wrist, attached to the pocket of your BC jacket or mounted on the HP hose of your console.

What distinguishes the Mark II from all other dive computer models (except the Edge) is that you can replace the batteries yourself. There is no need to mail the computer to the manufacturer or take it in to an authorized service center.

The Mark II is powered by three small lithium three volt batteries made by a West German company called Varta. These little babies will produce more than 1,200 continuous hours of running time—or three years of use for the average sport diver. If you accidentally leave your computer on during storage, no problem. Just pop in a fresh set of batteries.

What makes the Mark II so irresistible is its wide range of user friendly features. The computer can be turned on or off with a twist of the wrist. Once switched on, it automatically runs through a self-diagnostic test, displaying all its functions.

While the dimensions of this compact computer are very small, the jumbo digits displayed on its large LCD screen are twice the size of most others. You don't need glasses to read this one and your buddy can view your display from five feet away. The numbers are sharply etched on a bright silver screen.

The Mark II performs all the normal functions you would expect in a multi-level dive computer. It does pre-dive scrolling of your no decompression depth/time limits to help you plan your next dive. It displays current depth, maximum depth, safe dive time remaining, elapsed dive time and elapsed surface interval time. The darn thing even tells you how many hours to wait before flying. And, like most multi-level computers, it provides all this information for either the first dive or any number of repetitive dives. The real miracle of these electronic computers is that the instrument constantly calculates and recalculates your allowable dive time based on the precise minutes spent at specific depths and credits all applicable surface interval time. It is totally automatic and so convenient it becomes addictive.

In addition to being user friendly, the Mark II is also safety minded. It behaves much like that mythical Mr. Conscience perched on your shoulder. If you exceed the safe no decompression bottom time, the screen displays a message telling you to "go up." If you begin to ascend faster than the maximum ascent rate, the computer blinks a red warning light to "ascend slower." If you ascend past a specified decompression ceiling, the ceiling depth display will flash until you descend below the ceiling. Misbehave and the Mark II will tell you what you have done wrong and how to correct it.

The suggested retail price of the Mark II is $425 and it's one heck of a package. SKIN DIVER rates it as one of the "best values" in dive computers today.

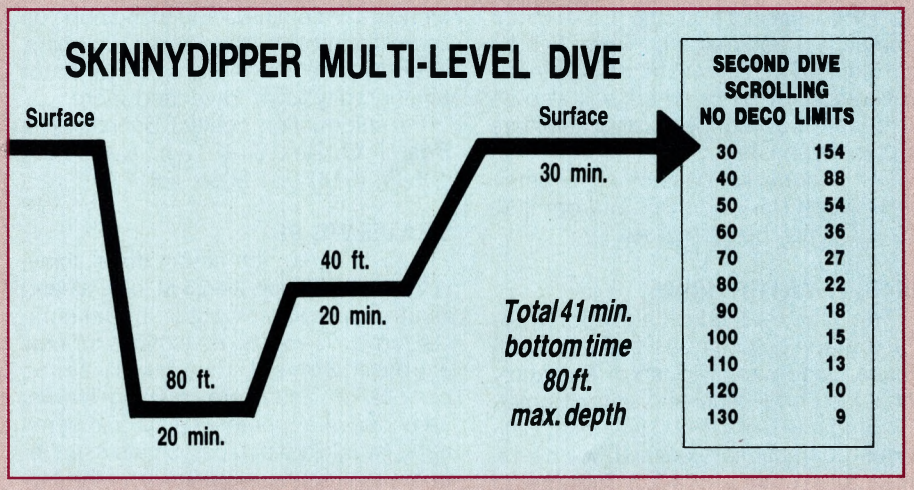
For more information, go to your local dive store and examine the Mark II for yourself. If your store doesn't carry this model, contact the manufacturer for the name and address of the Orca dealer nearest you or write Orca Industries, 10 Airport Way, Toughkenamon, Pennsylvania 19374; call (215) 268-3164.

The Mark II is a compact, thin line computer that offers many valuable features.

KEY FEATURES

- Manual on/off switch
- User replaceable batteries
- Large, bright LCD screen
- Jumbo LCD digits/letters
- Pre-dive scrolling of no decompression limits
- Current depth/max depth display
- Remaining dive time display
- Elapsed dive time display
- Safe decompression ceiling display
- Elapsed surface interval time display
- Time required before flying display
- Fast ascent warning light
- Exceeded safe ceiling warning light
- Over range warning display
- Low battery warning display
- High pressure hose attachment
- Wrist or BC jacket attachment

These no decompression limits are scrolled by the Mark II 30 minutes after the dive shown. Thus, after a 30 minute surface interval, you can make the same dive again.



ORCA MULTI-LEVEL DIVE COMPUTERS

Model	Price	Case	Weight	Method of Attachment	Displays	Depth Range	Decompression Model	Pre-Dive Scrolling	Rate of Ascent Warning	Altitude Range	Decompression Stops	Battery Power	Computer Activation	Low Battery Warning	Remarks
Edge	$715	Machined alluminum alloy	1.5 lbs.	1) Wrist mount with straps 2) Hose mount with holster	Graphic and digital dot matrix	0-175'	Modified Haldanean algorithm based on 12 tissue groups	No decompression limits from 30 to 150'	Alpha display only	Self adjusting, sea level to 2,000'	Graphic and numerical display of depth and time required	One 9 volt lithium battery replaceable by user.	Manual switch for on and off	Alpha display 4 hours from end	Edge is a popular choice for professional divers
Mark II	$425	ABS plastic	5.5 ozs.	1) Wrist mount with straps 2) Hose mount with holster 3) BC mount with split ring	Digital with Alpha numeric and flashing red LED warning lights	0-199'	Modified Haldanean algorithm based on 12 tissue groups	No decompression limits from 30 to 130'	Flashing red LED warning indicator and flashing depth display	Self adjusting, sea level to 2,000'	Numerical display of depth plus flashing red LED warning lights	Three, 3 volt 1/2 AA lithium batteries replaceable by user	Manual switch for on, manual or automatic switch for off	Numeric display for full range of battery life, Alpha display for low range of battery life	Mark II is the choice for sport divers

DIVER'S CALENDAR

MIAMI SHELL SHOW

The Greater Miami Shell Club will host its 28th annual Shell Show **January 19-21** at 13250 Northeast 8th Avenue in Miami, Florida. There will be shell exhibits and sales and a kiddie pool where children under 12 can collect shells. There will be hourly doorprize drawings and a raffle for a television.

For information contact Sandra Gayle Motes, 7305 NW 59th Street, Tamarac, FL 33321; (305) 726-5190.

WRECK DIVERS' BANQUET

Alan Scott, a member of the team that discovered the SS *Central America*, will be the guest speaker for the California Wreck Divers 19th annual banquet, to be held **January 27** at Reuben's in Marina del Rey, California.

For more information contact Pat McFerran at (213) 390-5171.

GREAT LAKES SHIPWRECK FESTIVAL

The 13th annual Great Lakes Shipwreck Festival, sponsored by the Ford Seahorses scuba diving club, will be held **February 17** at the Ford Motor Company Headquarters. There will be multi-media presentations on newly discovered shipwrecks. There will also be a forum on diving topics plus seminars and many exhibits.

For information contact M. Gramer, 1841 North Denwood St., Dearborn, MI 48128; (313) 561-8393.

UNDERWATER 1990

The Channel Islands Underwater Photographic Society will present its 6th annual underwater film show **February 24** at the Port Hueneme Cultural Center, 575 Surfside Drive, Port Hueneme, California. Jean-Michel Cousteau will be the host, presenting unseen footage of Cousteau Society expeditions. John McKenney will premiere his first film featuring sand tiger sharks.

For information contact Terry Schuller at (805) 984-7759.

OCEAN EXPO '90

The fourth annual Ocean Expo International show will be held **March 8-11** at the Radisson Centre Convention Facility at 777 NW 72 Ave., Miami, Florida. There will be exhibits, scuba introductions, a film festival, parties, lectures and lots of doorprizes.

For information contact Ocean Expo Productions, Jim and Susan Payette, 1141 NE 142 Street, North Miami, Florida 33161; (305) 891-6095.

SEA ROVERS CLINIC

The 36th annual Boston Sea Rovers International Underwater Clinic will be held **March 10-11** at the Copley Plaza Hotel in Boston, Massachusetts. Topics discussed will include underwater photography and video, marine life, wreck diving, computers in diving and diving medicine. Sunday seminars will include oxygen administration, rescue, wreck diving, underwater video and more. The evening program will take place at John Hancock Hall's Dorothy Quincy Suite.

For more information contact the Boston Sea Rovers, P.O. Box 291, Nuttings Lake, MA 01865; (617) 438-7687.

BENEATH THE SEA

Beneath The Sea will be held **March 23-25** at the Westchester County Convention Center in White Plains, New York. John McKenney will present his first film, *Sand Tigers*, and Dee Scarr will be master of ceremonies at the film festival. There will be many exhibits and 54 hours of seminars and workshops on scuba instruction, shipwrecks, dolphins, sharks, dive computers, underwater photography, dive travel and more.

For information contact Beneath The Sea, P.O. Box 644, Rye, New York 10580; (914) 961-2088.

SEAVIEWS 90

Seaviews 90, the scuba trade show, will be held **March 24-25** at the Oakland Hyatt Convention Center in Oakland, California. There will be exhibits for new scuba equipment, dive travel, scuba certification and more; fashion shows; an underwater photo display; and seminars. Nondivers can participate in an introductory scuba experience in the Hyatt pool. A film festival will be held Saturday evening.

For information contact Seaviews '90, P.O. Box 1645, Union City, CA 94587; (415) 278-6119.

BOSTON DIVING SHOW

The 40th edition of the Boston Diving Show will be held **April 21** at the Boston Park Plaza Hotel in Boston, Massachusetts. There will be exhibits, seminars, a film show and more. A tank inspection course will be held separately ($125).

For information contact Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, MA 02117.

skin diver

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Scuba Quiz

Category: Physiology

Topic: Sudden, Unexplained Fatalities

By Dennis Graver

From time to time a diver suddenly, unexplainably and without warning, loses consciousness and cannot be revived. What causes this phenomenon and what, if anything, can be done to prevent it? Are you familiar with the factors that contribute to these sudden fatalities? While not a pleasant topic, it is important to have knowledge regarding it. Test what you know by answering the questions, then studying the answers on the following page.

1. Sudden, unexplained fatalities usually occur in which of the following age groups:
- ☐ A. 25-45
- ☐ B. 35-55
- ☐ C. 45-65
- ☐ D. 55-75

2. Sudden, unexplained fatalities are most likely to occur when the air temperature is _____ and the water temperature is _____ .
- ☐ A. High, high
- ☐ B. High, low
- ☐ C. Low, high
- ☐ D. Low, low

3. Symptoms preceding the sudden fatality syndrome include:
- ☐ A. Exhaustion
- ☐ B. Chest pains
- ☐ C. Breathing difficulty
- ☐ D. All of the above
- ☐ E. None of the above

4. Which of the following signs are usually exhibited by people who become victims of sudden fatalities (select all correct):
- ☐ A. Calmness
- ☐ B. Fatigue
- ☐ C. Exhaustion
- ☐ D. Complaining
- ☐ E. Irrational behavior

5. True or False: Most victims of sudden fatalities were aware of predisposing medical conditions.
- ☐ A. True
- ☐ B. False

6. True or False: Scientific studies indicate that sudden fatalities are likely to occur from exertion even with a healthy heart.
- ☐ A. True
- ☐ B. False

7. Sudden fatalities are usually caused by:
- ☐ A. Heart arhythmias
- ☐ B. Heart disrhythmias
- ☐ C. A heart attack
- ☐ D. Any of the above

8. True or false. The cause of a sudden fatality can usually be detected with an autopsy.
- ☐ A. True
- ☐ B. False

9. The denial of any physical weakness coupled with aggressive behavior is likely to cause:
- ☐ A. A heart attack
- ☐ B. Loss of consciousness
- ☐ C. Extremely high blood pressure
- ☐ D. Severe vertigo

10. True or false. Irregularities in heart beats occur more frequently than normal when diving.
- ☐ A. True
- ☐ B. False

11. Which of the following stresses is most likely to cause a sudden fatality?
- ☐ A. Cold
- ☐ B. Exercise
- ☐ C. Stress
- ☐ D. Equipment
- ☐ E. Middle age

12. Premature ventricular contractions of the heart occur commonly beginning at about the age of:
- ☐ A. 30
- ☐ B. 40
- ☐ C. 50
- ☐ D. 60

13. Sudden fatalities among women divers:
- ☐ A. Are the same proportionally as those for men
- ☐ B. Tend to lag 10 years behind in risk
- ☐ C. Approach those of men for women who smoke
- ☐ D. Are nearly non-existent

14. Sudden fatalities in diving usually occur:
- ☐ A. Underwater at the beginning of a dive
- ☐ B. Underwater at the end of a dive
- ☐ C. At the surface at the end of a dive
- ☐ D. At random times during dives

15. Sudden fatalities would most likely be prevented by:
- ☐ A. Closer buddy contact
- ☐ B. Improved emergency response
- ☐ C. Good medical and physical fitness for diving
- ☐ D. Establishing an upper age limit for diving
- ☐ E. All of the above

Scuba Quiz

Answers: Sudden, Unexplained Fatalities

1. B. 35-55. It may seem that this is a young age group for sudden fatalities, but it is supported by the accident statistics. The message is that the problem encompasses more divers than most would expect it to affect. This is also why a physical exam at least every two years is recommended for divers 40 years of age and older.

2. B. High, low. When the air temperature is high, the physical stress of gearing up for a dive is also high. The pre-dive work load coupled with the stress of cold water creates the most likely condition for a sudden fatality. Steps should be taken to minimize the physical stress of suiting up and to insulate against heat loss. Older divers should consider using drysuits when diving in water colder than 65°F and should wear some insulation even when diving in warm water.

3. E. None of the above. Feeling tired may be a symptom in some instances, but this is usually ignored. There are numerous instances in which divers have indicated they were fine and then expired shortly afterward. Part of the problem is the absence of any warning symptoms.

4. A. Calmness B. Fatigue. In many instances, victims of sudden fatalities exhibited no signs at all. Those who did usually said they were a little tired but were otherwise OK. They declined assistance. They appeared fine and were functioning at one moment, then lost consciousness at the next. The point is that there was little to suggest a serious problem was imminent.

5. A. True. The tragedy of many sudden fatalities is that the victims were aware of medical problems that placed them at risk, but chose to ignore them. In many instances this is owing to the macho attitude of middle aged men who do not realize the magnitude of the risk imposed by diving.

6. B. False. There is no evidence to suggest this. Victims of this phenomenon typically have a history of heart disrhythmias or premature ventricular contractions. Healthy individuals should not fear diving because unhealthy people expire while diving when they should not be diving at all.

7. D. Any of the above. "Arhythmia" means the heartbeat is without rhythm. "Disrhythmia" means the heart is having difficulty beating or that the rhythm is irregular. A heart attack can certainly cause sudden death, but the pheonmenon is most likely associated with irregularities in heart rhythm.

8. B. False. One of the reasons some diving fatalities are unexplained is the absence of information from autopsies. Heart arhythmias or disrhythmias are undetectable with an autopsy and so is a heart attack unless the victim lives for 6 to 12 hours following the attack. It is believed that the cause of death for divers is incorrectly diagnosed as drowning by many coroners.

9. B. Loss of consciousness. People who think they can do more than they are truly capable of doing suffer from extreme stress. The end result is a sudden lowering of blood pressure, decreased circulation to the brain and unconsciousness, which is a dangerous situation when immersed. This malady is known as "vasovagal syncope." This is again associated with an aggressive, mind-over-matter, macho male attitude.

10. A. True. Heart irregularities are much more frequent in diving owing to the effects of the diving reflex, cold and other factors. While this is normal and not a problem in and of itself, it places those with a previous history of seemingly minor heart problems at great risk when diving.

11. A. Cold. All of the answers are serious stresses that can contribute to a sudden fatality for divers who are not physically fit, but the greatest stress of all is the net effect of becoming chilled. Cold water is not required. A reduction in temperature sensitivity and a thinning of the skin and subcutaneous fat occur as a result of aging. Loss of body heat takes place in seemingly warm water when the body is not adequately insulated.

12. B. 40. Premature ventricular contractions (PVCs) occur infrequently at age 20, more commonly at age 40 and are characteristic at age 60. There is a relationship between PVCs and heart disrhythmias, which contribute to sudden, unexplained fatalities. The ability to handle cold stress is also reduced at about 40 years of age. Cardiac rhythm does not adjust to normal under the stress of cold as much as it does for younger people.

13. C. Approach those of men for women who smoke. The risk of a sudden fatality lags about 20 years behind for women, but the age differential is narrowed significantly for women who smoke. The risk for men is increased for those who smoke. People in general should refrain from smoking, but divers absolutely should not smoke. Drugs and alcohol absolutely compound the problem for both sexes.

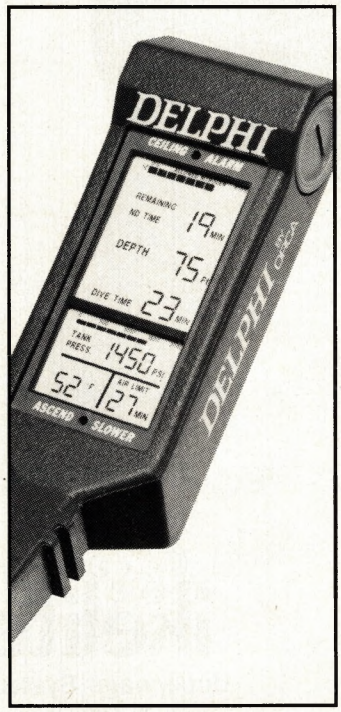
14. C. At the surface at the end of a dive. Most sudden deaths reported occurred without warning while the divers were making their way back to the boat while at the surface at the end of dives. The victims simply lost consciousness. They were frequently rescued very quickly, yet failed to respond to first aid. Heart irregularities can be attributed solely to fatigue. The older we become, the more muscular the work required to breathe. The pacing of activity is always a good idea when diving, but its importance increases with age.

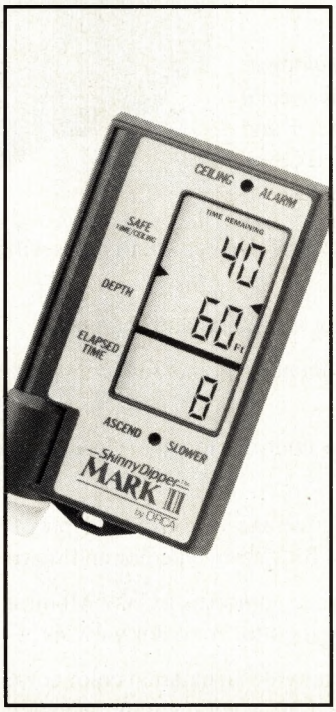
15. C. Good medical and physical fitness for diving. Usually sedentary, aggressive personalities with minor heart problems, who become chilled while diving and who overexert are candidates for sudden fatalities. Age alone does not preclude diving activities for those who are fit. Buddy contact and emergency procedures cannot overcome the malady, which can only be prevented by ensuring proper fitness to dive.

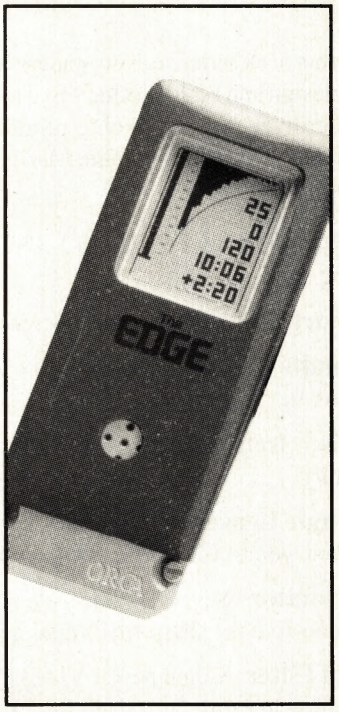
This is a serious subject for a quiz, but the information needs to be familiar to as many divers as possible owing to the serious consequences involved. We must be medically and physically fit for diving, protect ourselves from cold, avoid overexertion and harmful habits and dive within our limitations. These recommendations apply to all divers, but their importance increases with age. Annual physical exams for divers over the age of 40 are recommended and encouraged. For more on this subject see this month's Diving Medicine.

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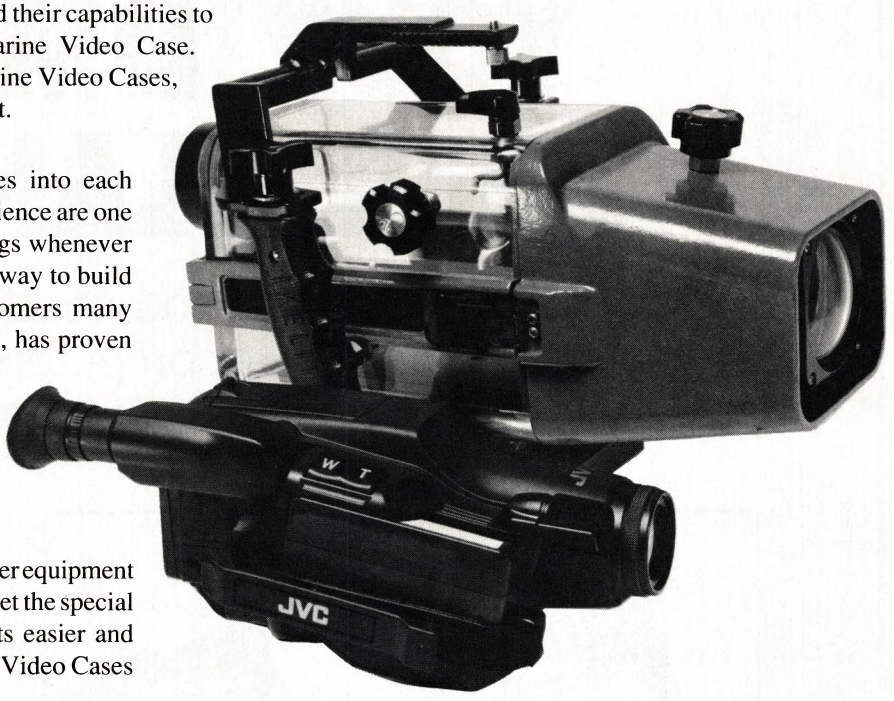
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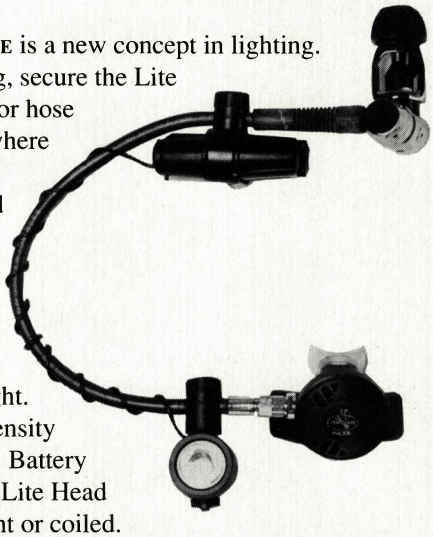
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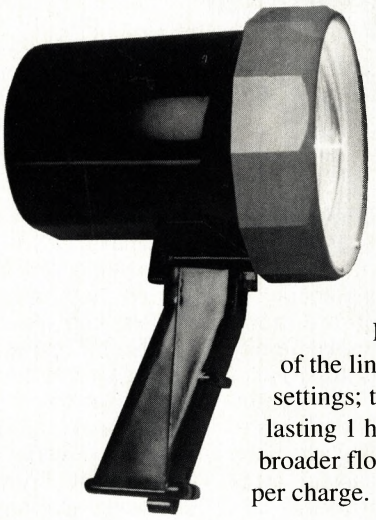
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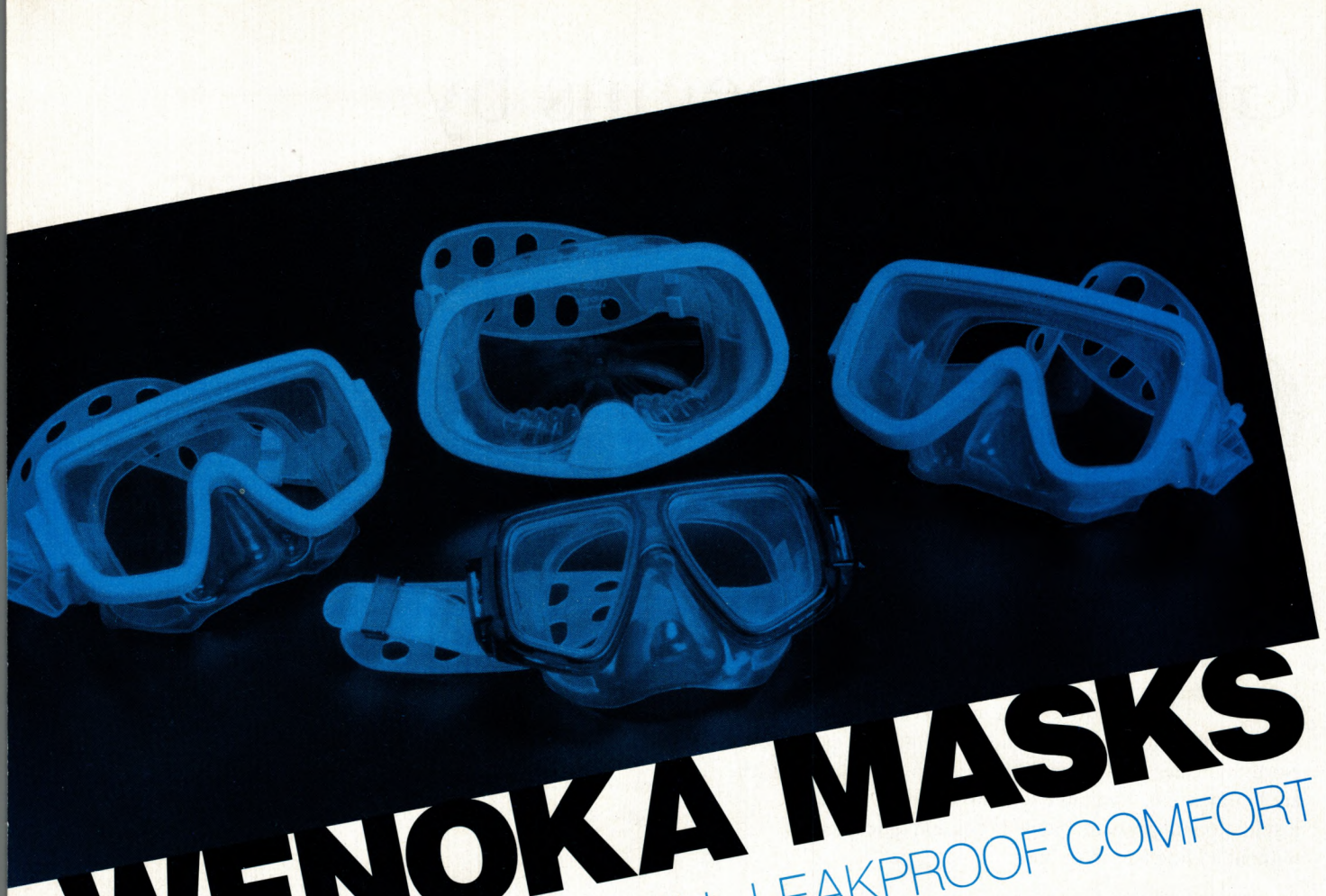
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WENOKA MASKS

SUPER SOFT SKIRTS SPELL LEAKPROOF COMFORT

TEXT AND PHOTOGRAPHY BY BONNIE J. CARDONE

Have you been a diver long enough to remember ring-around-the-face? This unsightly black mark—frequently seen on veteran divers—was the result of wearing an ancient mask with a neoprene rubber skirt that had begun to deteriorate. Black rings around the face have been virtually eliminated since nearly all modern masks have silicone rubber skirts, which do not break down as they age. However, many clear silicone—seemingly comfortable—mask skirts still leave impressions on their wearers' faces that may last for hours. Well, this too, shall pass. The new Wenoka SeaStyle mask skirts are so soft and pliable no marks are likely to be left on your face no matter how long you spend underwater. And, these incredibly comfortable skirts will not irritate delicate areas (such as under the nose) no matter how many dives you make each day or how many days you dive. These mask skirts also fit well, eliminating annoying water leakage.

Although their skirts are superior, SeaStyle masks are special in other ways. All of them, for instance, were hydrodynamically designed to reduce drag underwater. We illustrate the entire mask line on these pages. It consists of four models, one of which should should be suitable for nearly every face.

Let's look at the top of the line Cabrilla first. Called the "full size picture 'window mask'" in Wenoka's catalogue, the Cabrilla has a single lens and offers a wide field of view. It was especially designed for those with larger faces. Three SeaStyle masks, including the Cabrilla, have a feature no other mask on the market has: Their frames are canted 11 degrees (they slant, coming closer to the face at the bottom) to improve downward vision.

The Cabrilla's other notable features include the deluxe head strap that is wider on the back to help keep it in place and textured on the inside to reduce hair pulling; locks to secure strap ends; and extra large buckles that make strap adjustments easy, even underwater while wearing gloves. Tightening the strap is a one-handed operation—simply pull on the end. To loosen, push on the buckle and pull on the strap. The Cabrilla's frame comes in six colors. The mask has a

COMPARISON OF WENOKA SEASTYLE MASKS

Model	Price	Design	Frame Material	Skirt Material	Nose Pocket	Seastyle Colors	Comments
Cabrilla 27503	$64.95	Single lens	ABS plastic	Clear silicone	Yes	Yellow, turquoise, blue, smoke, red, clear	Low volume "picture window" mask. Lens canted 11 degrees to improve downward vision.
Mini-Cabrilla 27502	$62.95	Single lens	ABS plastic	Clear silicone	Yes	Yellow, turquoise, blue, smoke, red, clear, pink	All the features of the Cabrilla but scaled down for smaller faces.
Advanta 27501	$55.95	Split lens	ABS plastic	Clear silicone	Yes	Turquoise, blue, smoke, red, clear, pink	Very low volume, goggle-type mask. Lens canted 11 degrees to improve downward vision.
Opti-Purge 27505	$49.50	Single lens	ABS plastic	Clear silicone	Yes	Yellow, turquoise, blue, smoke, red, clear, pink	Modern version of an old standard. Low profile purge can be plugged or left functional.

translucent silicone skirt and strap.

The Mini-Cabrilla has all the features of the Cabrilla, but is scaled down for smaller faces. Its frame comes in seven colors.

Those divers who prefer goggle style



SeaStyle Advanta

masks should try the Advanta. This mask has extremely low volume, thus is easy to clear should this ever be necessary. It also has a canted frame for excellent downward vision and the same strap and buckles as the Cabrillas. The Advanta



SeaStyle Cabrilla

comes in six frame colors and has a translucent silicone skirt and strap.

The last but not least mask Wenoka SeaStyle offers is the unusual Opti-Purge. Of all the masks shown here, this is the one photographers most prefer to have their underwater models wear. It is the modern version of that old standard, the oval mask (the very same one that also produced ring-around-the-face). Many of us learned to dive in the early '70s wearing an oval mask. Photographers love these types of masks because the wide oval window shows much of a model's face. And, the Opti-Purge's clear silicone skirt lets light in so the face can be seen clearly. Models love wearing this mask because it has such a wide viewing area plus a purge valve. Purge valves used to be obvious and often ugly. The SeaStyle purge has a very low profile and

(Continued on Page 166)



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DIVING MEDICINE

BY ALFRED A. BOVE, M.D., PH.D.

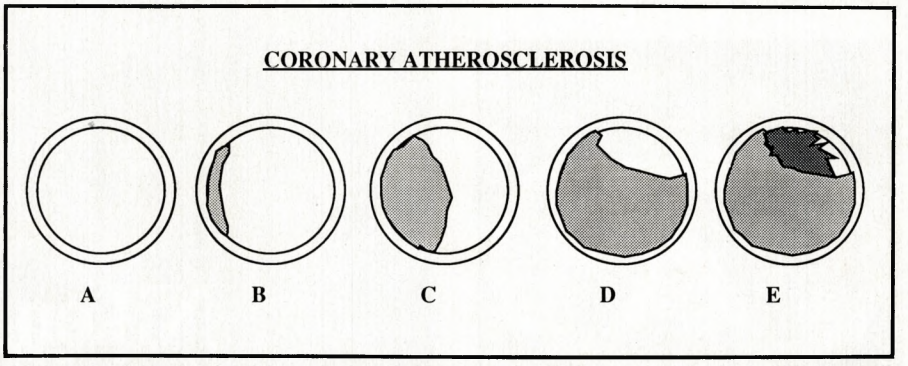
Coronary Artery Disease and Diving

The number of questions we receive about coronary disease seems to be increasing. This is not surprising because of the age of many divers trained in the ancient past (the 1960s). As men, in particular, age there is an increasing incidence of atherosclerosis (hardening of the arteries). Inevitably, some older divers develop coronary disease and raise interesting questions about diving after a heart attack, bypass surgery or balloon angioplasty. Understanding the disease and the factors that increase its risk is most important.

RISK FACTORS

At the present time, the most likely reason for a person over the age of 40 to die suddenly while diving is a heart attack with an accompanying fatal heart rhythm (ventricular fibrillation). The same cause is found in almost all other sports related sudden death in this age group. In that sense, diving is not unique. If a person with undetected heart disease jogs, plays tennis, swims, dives or engages in any other strenuous sport, he is at risk for sudden cardiac death. The common factor is exertion, which causes the heart to work beyond its capacity to obtain oxygen. The lack of oxygen (ischemia) causes the heart to malfunction and a fatal heart attack may occur.

Risk factors for artery disease are for the most part controllable; much of your heart's fate is in your own hands. If you smoke cigarettes, are overweight, have elevated blood cholesterol and/or have high blood pressure, don't exercise and use cocaine, you are likely to have a heart attack while still in your 20s. If all of the risks are present, atherosclerosis can rapidly accelerate. You can greatly reduce your risk of artery damage by removing the risk factors, the most dangerous of which is smoking. Estimates of a $50 billion medical bill yearly from cigarettes indicate the significance of this health menace. Much of the cost is from treating damaged blood vessels, in addition to lung cancer. The other important risk factor is your blood lipids. These are fats carried in the blood. Cholesterol is a good indicator of the problem. Blood cholesterol around 200 units is considered safe. If your cholesterol is above 250, your risk for a heart attack is increased considerably. High blood pressure should not be a risk today because of the excellent medications we now have for it. Avoiding use of cocaine is a simple means of protecting your arteries from the damage it can induce and exercising regularly will help keep your arteries healthy. Your family history is important, but does not condemn you to follow in the footsteps of the previous generation. Family tendencies to high cholesterol, diabetes and obesity can be avoided by attention to your health.



These diagrams illustrate coronary atherosclerosis from a normal artery (A), through early plaque formation (B), to moderate plaque formation and partial blockage (C), to nearly complete blockage (D). A blood clot has formed on the plaque surface in (E).

ATHEROSCLEROSIS

The process that causes narrowing and ultimately occlusion of arteries to the heart, brain and other organs is still not well understood. The risk factors are known to increase likelihood of disease based on population studies, but the exact mechanism whereby these factors damage arteries is still unknown. We do know that these factors result in injury to an artery that ultimately leads to a plaque on the artery wall. The plaque grows until it damages the inner lining. When this lining is damaged, blood clots over the damage and blocks the artery. The sudden blockage stops the blood flow and causes the heart muscle supplied by the blocked artery to die. This is the essence of a heart attack. Each year more than one million people have heart attacks and half or more of these people die suddenly from them. As noted above, most sudden death involved with sports and recreation is owing to a heart attack.

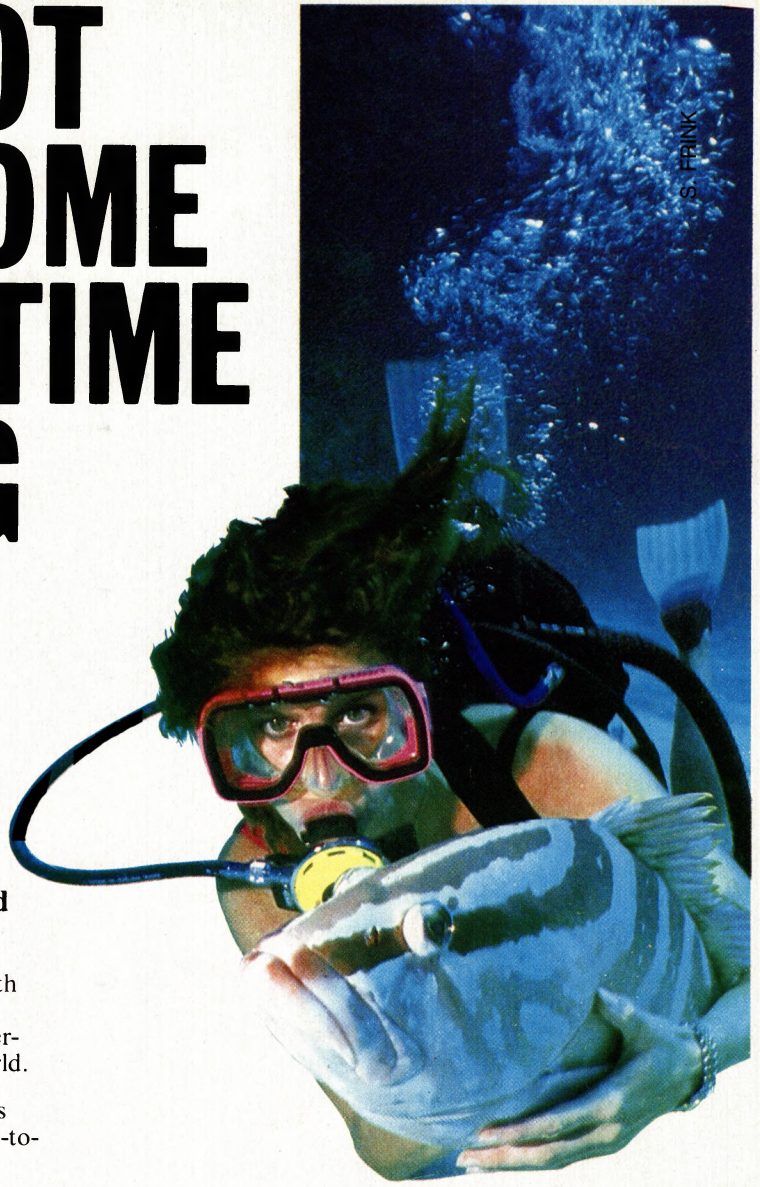
DETECTION AND PREVENTION

As noted in the diagram, as the artery narrows from artherosclerosis, there can be a long period where it is undetected because it does not compromise blood flow and oxygen delivery to the heart. Only when the artery is 70 to 80 percent narrowed will there be evidence of inadequate oxygenation of the heart at rest. To test for narrowing before it causes symptoms, we usually stress the heart by exposure to exercise on a bicycle or a treadmill. By stressing the heart, we can detect loss of blood flow reserve before it is totally lost and symptoms occur at rest. Adding a small amount of isotope through an injection into a vein, allows us to measure the actual blood flow to the heart. When an artery is partially narrowed, we will find a lack of flow in the area affected. This shows up as a defect or a hole in the image. We also monitor the electrocardiogram (ECG) and blood pressure during the stress test. Abnormalities in the ECG also also tell us there is inadequate blood flow to the heart. When blood pressure rises abnormally with exercise, we can presume the subject has hypertension and if blood pressure falls with exercise, we are quite concerned that a serious lack of oxygen is preventing the heart from pumping adequately. A stress test is also useful in determining the exercise capacity of healthy subjects and people with heart disease. This is the best way to be sure diving will be safe from the standpoint of heart disease. By producing work loads similar to or even greater than those encountered in diving, we can determine if the heart can handle the usual exercise requirements of diving.

When the atherosclerotic process is early in its course and no symptoms are present, your physical exam and ECG may be perfectly normal. These findings are no guarantee you are free from coronary disease. If you are physically active, have positive risk factors and are over

(Continued on Page 153)

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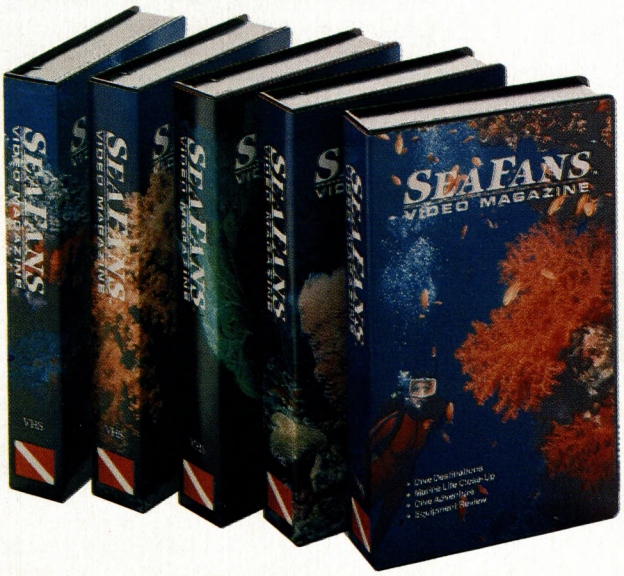
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BY JIM WALKER
PHOTOGRAPHS BY BONNIE J. CARDONE

I've heard it said the incline plane or ramp was more important to the advancement of civilization than the wheel. I know it's more important to divers. Not only does the sloping or ramping of exposed surfaces streamline our gear for less resistance to movement through the water, but we are propelled by two large incline planes—fins. Oceanic USA has taken this concept even further. Its Ocean Pro II fin is designed with ramps upon ramps, all designed for increased efficiency and diver comfort.

On any dive fin, the most important incline plane is the blade. The Ocean Pro II blade is made of a Dow Corning poly-

MORE RAMPS, LESS CRAMPS

Ocean Pro II Fins

mer called Pellethane. This material is translucent (except for the black fins), durable and has just the right amount of snap for the best propulsion. The blade is also angled for the most efficient propulsion and supported by large, tapered side ribs that channel water correctly over the blade.

While most fins have a relatively flat bottom and an abrupt change of level from the top front of the footpocket to the blade, the Ocean Pro II takes a different approach. The center and widest portion of the blade slopes gradually up and over the front of the footpocket. This reduces water turbulence on the down-kick. And, underneath the fin, there's a slightly steeper, but still sloped meeting of the blade and footpocket. This underside also features two large midribs to direct water flow and support the blade.

If a fin flexes at the footpocket/blade junction, a diver is more likely to use his/her toes while kicking. This can lead to foot cramps. The Ocean Pro II has reduced this possibility by extending the blade material completely under the footpocket to the heel. This extra support transfers more of the work of kicking to the diver's thigh muscles, which are best suited for it.

Additionally, inside the footpocket, the Ocean Pro II has a unique toe ramp designed to slightly elevate the diver's toes and thereby reduce the possibility of them being curled during a kick. This also positions the ball of the foot at the optimum spot for greatest comfort and kicking power.

The Ocean Pro II's footpocket slopes gradually up from toe to heel for reduced water resistance, and is made of a flexible elastomer for comfort. The footpocket is reinforced over the arch of the foot for support yet is soft and pliable where it approaches the ankle. Bars of the footpocket elastomer extrude through the blade material at the bottom of the fin for traction on wet boat decks.

The Ocean Pro II's buckles have double rollers for smooth adjustment of the straps. The buckles also feature spring loaded clamps that can easily be operated by gloved fingertips. To tighten a strap, merely pull on either end of it, utilizing the textured ridges for a good grip. The strap will roll through the buckle with each raised rib clicking securely under the clamp. To loosen a strap, press in on a clamp. The strap can then be easily pulled through the buckle.

The strap buckles also swivel so you can put on and take off your fins without changing adjustment. Just pull the strap down below the heel of the footpocket and insert your foot, then pull the strap back up. An easy grip tab in the center of the heel strap facilitates this.

The Ocean Pro II fin is available in small, medium or large for $99.95. All models have a black footpocket but the blade is available in translucent blue, red, pink, turquoise and opaque black. These colors match other Oceanic dive gear and should complement gear by other manufacturers as well.

The Ocean Pro II fins: more ramps and less cramps. Check them out at your local Oceanic dealer. For a free catalogue or the location of your nearest dealer call Oceanic at (800) 458-8880 or (415) 352-5001 or write Oceanic USA, 14275 Catalina Street, San Leandro, California 94577-5589

COMPARISON OF OCEANIC DIVE FINS

Model	Length	Vents	Blade Material	Footpocket Material	Floating	Colors	Sizes	Price	Comments
Ocean Pro II	S–22.5" M–23.75" L–24.25"	No	Dow Corning Pellethane	Elastomer	No	Footpocket black with blue, red, pink, turquoise or black blade	S, M, L	$99.95	Oceanic's most powerful fin. Ergonomically designed for maximum foot comfort. Heel extension to reduce foot cramping.
Ocean Pro	S–20.25" M–21.5" L–22.25"	Yes	Ethyl vinyl acetate (EVA)	Elastomer	Yes	Black, pink, turquoise	S, M, L	S–$57.00 M–$59.50 L–$66.00	Oceanic's lighter weight fin suitable for all diving conditions. Vented for less leg strain.
Reef Pro	XS–19.75" S–20.75" M–21.25" L–22.5" XL–23.25"	Yes	Ethyl vinyl acetate (EVA)	Elastomer	Yes	Black, pink, turquoise	XS, S, M, L, XL	XS–$37.50 S–$39.00 M–$41.50 L–41.50 XL–$44.00	Intended for use in tropical climates. A full power, full foot fin. Vented for less leg strain.

The Ocean Pro II fin has a soft black elastomer footpocket and a snappy blade that is available in opaque black, translucent red, blue, turquoise or pink (not shown). Both footpocket and blade slope for optimum performance.



SKIN DIVER MAGAZINE
1990
Bestseller Series
U/W VIDEOS

TEXT AND PHOTOGRAPHY BY JACK AND SUE DRAFAHL



AMPHIBICO VII

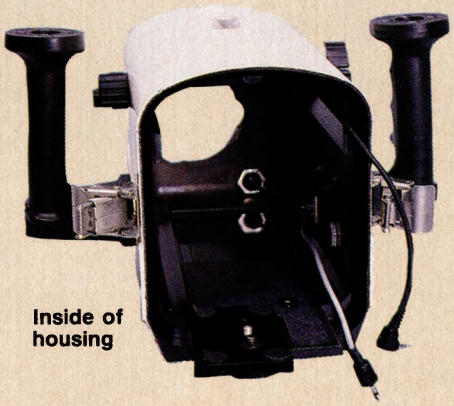
COMPACT, LIGHTWEIGHT AND EASY TO OPERATE

When it comes to compact, lightweight video housings, Amphibico, Inc. offers some of the best on the market. Its housings are so efficient with respect to size and weight it's hard to believe you can fit an entire video camera in one. Amphibico's chief designer, Val Renetkins, has more than 20 years of experience and his housings have been the backbone of the video rental industry. They have been used by the National Geographic Society for a variety of pictorials. More recently an Amphibico housing was used in the movie *The Abyss* to take the ROV footage and the images shown on the U/W monitors.

The Amphibian V11 makes underwater videography a real pleasure. Our first look at the outside of this Amphibico indicated it was definitely different than others we had reviewed. As we picked up the white aluminum housing, we noticed how lightweight it was—it weighs only 15.5 pounds with the camera installed. The handles are extremely comfortable, with deep finger grooves. Each of the handles can be removed by using a special hex wrench, making the unit compact for travel.

By calculating camera weight and housing displacement, Amphibico has eliminated bulky lead ballast. The housing is designed to be a few ounces negative, balanced to avoid diver fatigue and eliminate the need for wings.

The camera controls are in front of the handles and can be activated without releasing the handgrips. The first control on



Inside of housing

KEY FEATURES

- All electronic camera controls
- Bayonet mount lens system
- High quality aluminum
- Precision coated optics
- Quick disconnect handles
- External visual recording signal
- Double O-ring seals on all controls
- Sensitive, noise-free microphone
- Pressure rated to 350 feet

COMPARISON OF AMPHIBICO VIDEO HOUSINGS

Model	Camera	Price	Depth Rating	Length	Width	Weight	Controls	Viewfinder	Materials	Lens Adapter
Amphibian V99	Sony V-99 High Band Ricoh R-800H Kyocera KD-H130	$1,596	500 feet	16¾ inches	7¾ inches	20 lbs. with camera	Electronic power, zoom, white balance, auto/manual focus	Magnifier 8X	Aluminum	Wide angle 0.59x nondistortion
Amphibian V11	Sony CCD-V11 Ricoh R-630 Kyocera KD-5010 Nikon VN-9000	$1,375	350 feet	15 inches	6 inches	15.5 lbs. with camera	Electronic power, zoom, white balance, auto/manual focus	Magnifier 8X	Aluminum	Wide angle 0.5x
Amphibian V9	Sony CCD-V9 Ricoh R-600	$1,135	350 feet	15½ inches	6 inches	15.5 lbs. with camera	Electronic power, standby, record, zoom	Magnifier 8X	Aluminum	120 degree wide angle, 0.42x
Amphibian TR5	Sony TR-5 Ricoh R-680 Kyocera S-530	$1,135	350 feet	12 inches	6 inches	9 lbs.	Electronic power, zoom, white balance, auto/manual focus	Magnifier 8X	Aluminum	Wide angle 0.42x
Amphibian F50, F70	Sony CCD-F50 Sony CCD-F70	$1,135	350 feet	15½ inches	6 inches	15.5 lbs.	Electronic power, standby, record, zoom	Magnifier 8X	Aluminum	120 degree wide angle 0.42x
Amphibian F35, F45	Sony CCD-F35 Kyocera M-710	$1,135	500 feet	16¾ inches	7¾ inches	20 lbs. with camera	Electronic power, standby, record, zoom	Magnifier 8X	Aluminum	120 degree wide angle

the right side operates the record function. Pulling the control with your index finger turns it on, releasing the control turns it off. Pushing the control forward puts the camera into continuous record, pulling back turns it off. The second control on the right side requires just a slight pressure down or up to change focus.

Two controls on the left side of the housing operate manual/autofocus/white balance and zoom/macro. Each of the four controls is double O-ring sealed.

All the camera controls are electronic, eliminating any levers or rods. The electronics are maintenance and trouble free and offer greater control over the camera than conventional knobs. If left on standby, the electronics will shut down after one minute to conserve battery power.

The front port of the Amphibian V11 has a unique bayonet mount. Pulling out and clockwise will disengage the port and expose the front lens of the video camera. The wide angle lens adapter is mounted inside the port, which makes changing ports efficient and easy. When you reattach the port you will know it's secure when you feel it click into place. There is a special accessory port that produces superior macro photography.

An external Amphibico microphone, effective below and above water, is a standard feature of the V11 housing. It adds startling realism to your underwater video through the dimension of sound.

Access to the camera itself is through the backplate of the housing. Two stainless steel catch and strike clasps are recessed on the side of the housing to prevent accidental opening underwater. The latches can be pin locked if additional security (as during rental) is required. A large O-ring is held in place in an angled groove around the inside of the backplate. A corresponding angled surface on the housing ensures an extremely secure, watertight fit. An adjustable 8X magnifier is mounted inside this backplate, allowing easy viewing underwater.

A finely machined camera plate is attached to the inside bottom of the housing and slides out on a grooved rail until it comes to a metal stop. The camera can be mounted with a thumb screw and then slid back into the housing. The battery can be changed between dives without taking the camera off this plate.

A red indicator light at the top of the housing will blink when the camera is in the record mode. If for some reason moisture enters the housing, a special sensor will start the record light flashing at an abnormal rate and then shut the whole system down after 30 seconds. The moisture sensor comes as a standard feature, but an audible alarm can be purchased as an optional accessory.

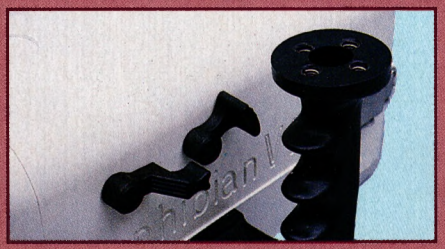
Additional accessories include a Nikonos camera mount, video lights, close-up kit and a surface umbilical cable. The versatility and workmanship of the Amphibian V11 housing is outstanding, from the front lens port to the magnifier at the back. With respect to its housings, Amphibico says it best: "State of the art becomes a work of art."

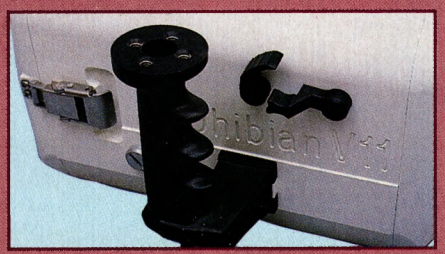
For further information about the Amphibian V11 housing contact Amphibico Inc., 9563 Cote de Liesse, Dorval, Quebec, Canada H9P 1A3; (514) 636-9910.

Inserting camera

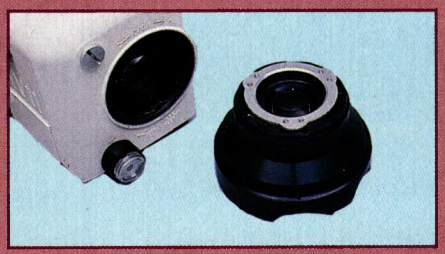


Zoom and white balance controls





Record and focus controls



Bayonet mount front port

The Amphibian V11 housing weighs only 15.5 pounds with the camcorder inside. By calculating this weight versus housing displacement, Amphibico has eliminated the need for bulky lead ballast. The system is a few ounces negative, balanced to avoid the need for wings. The controls operate electronically, eliminating levers or rods.

OPTIONAL ADD-ONS

Amphibian close-up kit	$349
Flat port	$218
Nikonos mount	$94
Nikonos strobe mount	$39
Audible moisture alarm	$92
Surface umbilical (100')	$315
Video Light PAC I	$595
Video Light PAC II	$875

NIKONOS SHOOTOUT 1989

MORE THAN $100,000 IN PRIZES

BY GERI MURPHY

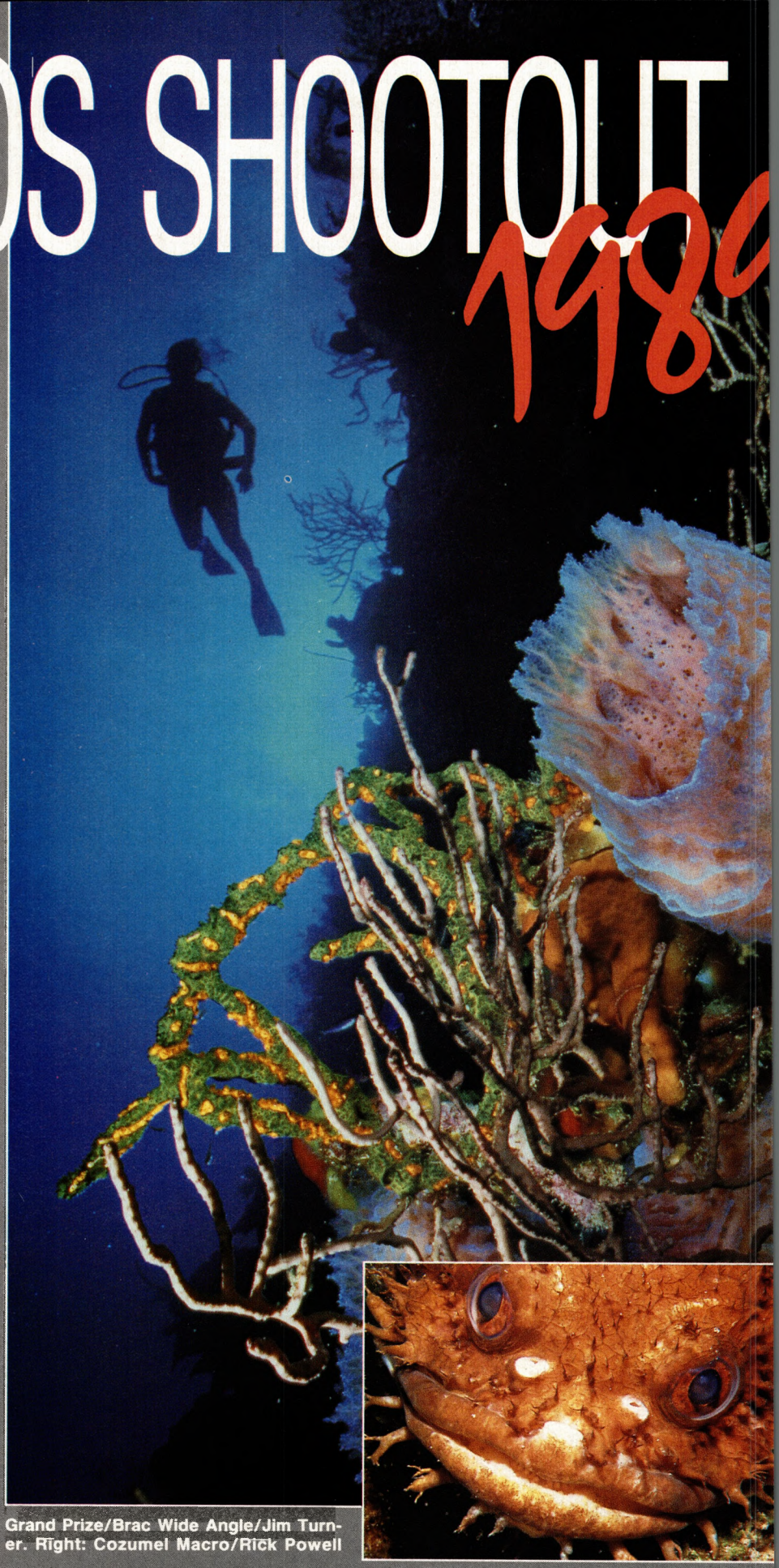
Meet the winners of the 1989 Nikonos Shootout—the largest and most unique underwater photo competition in the world. Contestants travel to four top dive resort destinations in the Caribbean to compete for more than $100,000 in equipment and travel prizes.

Now in its fourth consecutive year, the Nikonos Shootout continues to grow in size, prestige and prizes. The only contest of its kind, the Shootout provides underwater photographers with the ultimate challenge—competing on site, in the same ocean, on the same day. Rather than selecting photos from stock files, contestants must shoot one roll of film (36 exposures) with a specified lens and submit the best photo from that roll. Contestants can enter three lens categories during the one week shootout.

The 1989 Shootouts were held during the spring and summer on the islands of Cayman Brac, Grand Cayman, Bonaire and Cozumel. Official sponsors for this past year's events were Nikon Inc., See & Sea Travel, SKIN DIVER Magazine, ALM Antillean Airlines, Cayman Airways, Orca Industries, Henderson Aquatics, Continental Airlines and Eastman Kodak.

The grand prize for this event was a free trip for two to the fabulous Fiji Islands, sponsored by See & Sea Travel aboard the *Pacific Nomad*—plus thousands of dollars worth of Nikon photo equipment. Other prizes included free dive vacation trips to the Caribbean as well as supplemental photo equipment.

Unique to the Shootout '89 contest was the additional display of the grand prize winner on a giant Kodarama screen in Times Square, New York City. The underwater photo taken by Jim Turner of Augusta, Georgia, was displayed as a 1,500 square foot image (30 by 50 feet) on a gi-



Grand Prize/Brac Wide Angle/Jim Turner. Right: Cozumel Macro/Rick Powell

Winners



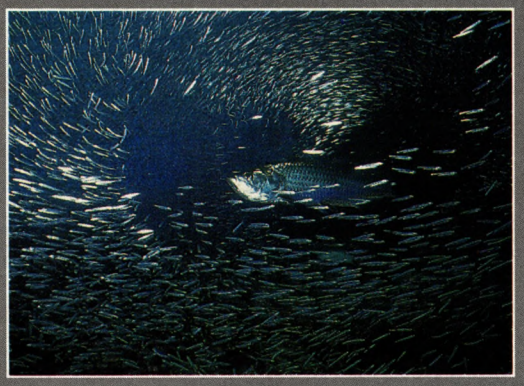
Bonaire Macro/Cliff Cassidy



Bonaire Wide Angle/Gordon Page



Cozumel Standard/
Peter Mellerup



Cozumel Wide Angle/David Mechlin



Bonaire Standard Lens/Lloyd Tucker



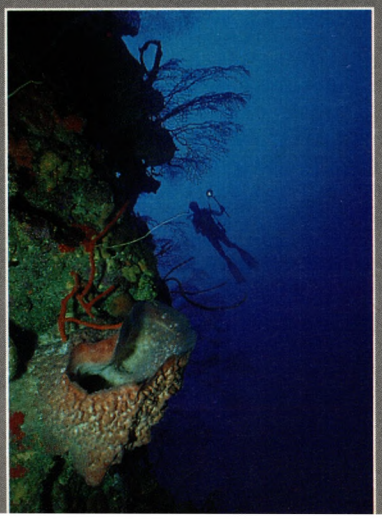
Grand Cayman Standard Lens/
James Garhart



Cayman Brac Standard Lens/Bill Waite



Cayman Brac Macro/Ken Nemeth



Grand Cayman Wide Angle/
Emilio Grenet



Grand Cayman Macro/Cozy Platt



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NIKONOS SHOOTOUT

gantic illuminated Kodak electronic display mounted on the main facade of the Marriott Marquis Hotel. An estimated 42 million New York City visitors were able to view this prize winning underwater color photo over a five week period. "We are extremely pleased with the display," commented Nikon's Frank Fennell. "The reproductive clarity of Kodak film and the magnitude of the display combined to make it a smash hit."

This year Nikon will again host a total of four Nikonos Shootouts throughout the Caribbean and Bahamas. Contestants must preregister to ensure a place in this growing competition.

NIKONOS SHOOTOUTS

If you would like to meet other divers who have a deep interest in underwater photography and also attend Nikonos photo lectures by the pros, you may wish to attend one of the four Nikonos Shootouts scheduled for this year:

May 5 to 12	Cayman Brac
June 9 to 16	Bonaire
July 7 to 14	Cozumel
August 4 to 11	Bahamas

Reservations and information:
(800) 272-9122
(305) 451-2228 (local)

July 7 to 14 — Cozumel

Reservations and information:
(800) 446-2166
(713) 466-2166 (Texas)

DIVERS UNLIMITED

(Continued from Page 16)

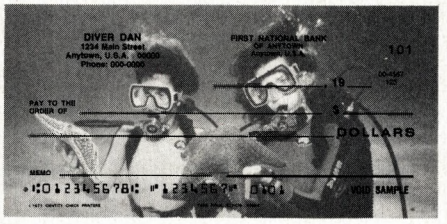
postings in the Caribbean and U.S.

The key to becoming a successful professional scuba instructor is outlined in Divers Unlimited's Triad Program. In as little as one month a relatively new open water diver can progress through the Triad Program and begin his/her career as a PADI open water scuba instructor.

Today there are several testing programs, but there is a lot of prior training leading to these programs. The first step is the advanced open water certification. "We encourage candidates to complete our entire Triad Program over a four week period," says Inman. During this program the student will be taught the additional skills and have supervised experience in underwater navigation, night diving, deep diving and search and recovery. The next step actually begins the Triad program. The four day rescue course develops the instructor candidate's knowledge and skills to effectively prevent problems and respond in diving emergencies. The medic first aid certifi-

many of our friends use these checks! Shouldn't We?

ALL NEW SCUBA CHECKS



8 SCENES IN FULL COLOR

GENERIC CHECKS are for Generic People. SCUBA CHECKS are for Scuba People. Now, each time you do the boring job of writing checks, you can relive your diving thrills with this all new series of eight exciting scenes from the underwater worlds of such famous photographers as Steve Botes, Howard Hall, Steve Frink and Doug Perrine, as they explore Pennykamp, Cozumel, Cayman and Bimini.

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cation is an integral part of the training.

Next is the nine day divemaster program. This is the first level of leadership training. The divemaster program provides student instructors with the necessary training to serve as supervisory personnel for open water diving activities. This session consists of three instructional modules that are taught concurrently. They include: watermanship and skill assessment; knowledge development; and practical application. Up to this point, the rescue diver course and the divemaster course can be taken through any local PADI affiliate training center.

The next step in the Triad Program is an optional but highly recommended course. It is the Instructor Development (IDC) preparatory course. This is a valuable two day seminar that helps the students develop their teaching skills in educational theory and presentation. Candidates are taught to fully understand the PADI system while actually assisting in teaching entry level classes and giving classroom, pool and open water presentations that are evaluated. The IDC prep is the final opportunity to strengthen one's academic knowledge before entering the instructor program.

The Instructor Development Course is a comprehensive seven day program that covers topics of interest to retail oriented instructor candidates as well as a forum for learning how to teach. The IDC program is devoted to teaching students how to teach the proven PADI method. Immediately following is the two day Instructor Evaluation that consists of exams and evaluation of the student's teaching ability in the classroom, pool and ocean. Graduation as a PADI open water scuba instructor follows.

If all this sounds like a lot of academics, it isn't. Students divide their time equally among classroom, pool and open water. "We try to make the . . . program a fun experience," says Inman, "because that's what they're going to be doing when they leave here as instructors."

South Florida is fortunate in having year-round warm water and good visibility. Divers Unlimited takes full advantage of the weather in training sessions, because graduate instructors will be working in similar conditions. All ocean sessions are done aboard DU's dive boats, working with real students and travelers.

The lure of working in the tropics is as attractive to women as it is to men. Many of the students graduating from Divers Unlimited Instructor College are women. A lot of the professional schools and stores teaching diving prefer a balanced instructor staff as female participation in the sport is growing.

For a whole packet of information on the Divers Unlimited Instructor College and the upcoming 1990 Triad Program, contact Divers Unlimited, 6023 Hollywood Blvd., Hollywood, Florida 33024 or call (800) 289-DIVE, locally call (305) 981-0165.

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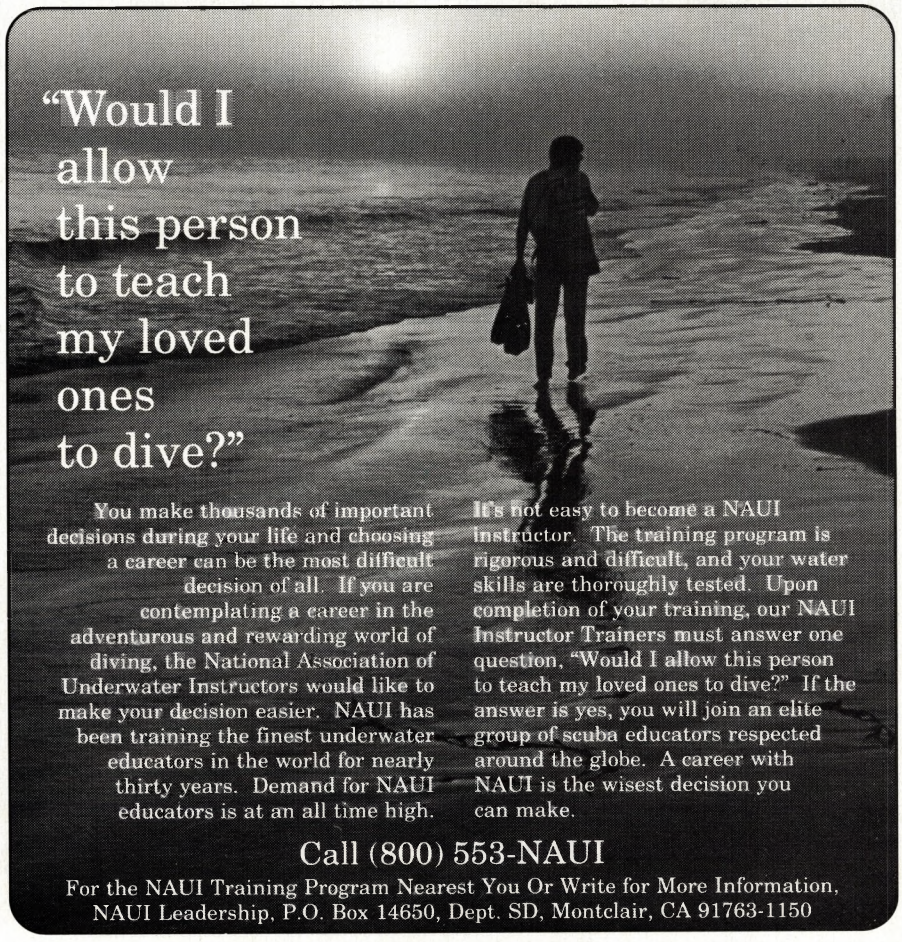
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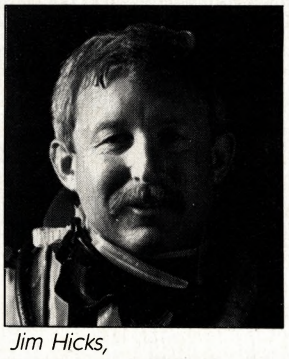
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NOGI AWARDS



BY JIM WALKER

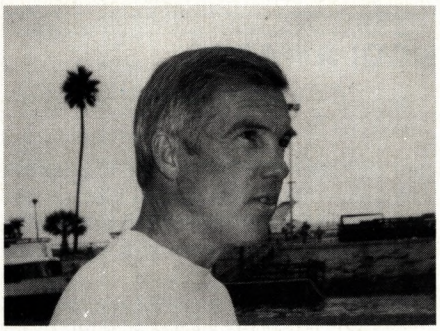
Sport diving is becoming safer, more comfortable and more fun all the time. This isn't an accident. The advancement of our sport is propelled by many selfless people who dedicate their professional and personal time to the betterment of diver training, equipment, education, medicine and more. Each year since 1960 the Underwater Society of America has recognized four such people by presenting them with a NOGI Award in arts, science, sports/education or distinguished service. SKIN DIVER Magazine co-sponsors these awards. Here are the 1989 NOGI Award recipients:

Jon Hardy/Sports/Education: Over the years, Jon Hardy has contributed to the sport diving community in many ways. He was the director of the YMCA Camp Fox on California's Catalina Island, chairman of the California Diving Legislative Committee and the National Scuba Legislative Committee. He has been a member of the American National Standards Committee for diving and instructor standards. He has served on the National Scuba Training Council and was a member of the Los Angeles County Underwater Safety Committee.

Hardy was the executive director of NAUI from 1974 to 1978 and in that capacity helped bring that organization to the forefront of diver education. He is an active NAUI, PADI, YMCA and L.A. County instructor. Currently, he is a consultant to Scuba Schools International and a technical expert to the diving community at large, presenting papers on diving safety at conferences and serving as an expert witness in scuba accident investigations. According to Hardy, "The part of my involvement with diving that makes me most proud is the ideas for improving diving safety that have come from my accident investigation."

Hardy has been a behind-the-scenes force in many works on diving and instruction safety. In addition to his consulting business, he owns Argo Diving Service on Catalina Island—operating dive charters and offering scuba instruction.

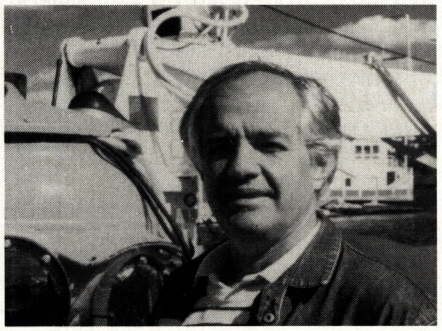
Andre Galerne/Distinguished Service: For more than 40 years, Andre Galerne has contributed his time, talent and personal resources to diving. As founder



Jon Hardy



André Galerne



Richard Slater



Jack McKenney

and owner of International Underwater Contractors in New York, he continues to create new technologies that make commercial and, by spinoff, sport diving, safer. His knowledge has been solicited by the U.S. Navy, NOAA, the Undersea and Hyperbaric Medical Society and OSHA.

Galerne's contributions include the design and construction of the first medical treatment center specializing in emergency care of North Sea oilrig divers—the North Sea Hyperbaric Center. He created the North American Hyperbaric Center in City Island, New York. At this facility he and his associates educate medical personnel in hyperbaric medicine.

Galerne has received numerous awards including becoming a Knight of the French Legion of Honor—presented by president Francois Mitterand for his activities as a partisan in World War II. Galerne also received a special commendation by the National Oceans Industry Association for improvement of safety and training in the diving industry.

As the current president of the Association of Diving Contractors, Galerne feels, "My main objective is to make ADC a true nationwide association representing not only offshore contractors but inshore contractors as well—recognizing that all big diving contractors began as small ones."

Richard A. Slater/Science: Dr. Richard A. Slater, a partner with Delta Oceanographics based in Oxnard, California, is a multi-dimensional contributor to underwater science. He has served as a geologist, biologist, consultant or operations director for more than 2,000 submersible dives around the world. He has personally served as scientist/pilot for more than 1,629 submersible dives. Based on these research missions he

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NOGI AWARDS

has published many scientific papers, one of the more recent being Biology and Geology of the Georges Bank Submarine Canyons, which appears in the textbook *Georges Bank*.

Perhaps Slater's greatest contribution to the advancement of the science of inner-space has been his guidance of more than 500 "junior scientists" in establishing efficient and productive diving procedures for manned submersibles.

In stimulating and enhancing the use of manned submersibles and increasing the productivity of these vehicles, Slater has had an extremely positive impact on the promotion of undersea research. His most recent contribution (at this writing) was the completion of a NOAA sponsored underwater study documenting the effects of the Alaska oil spill.

In spite of his busy schedule, Slater finds time for sport diving. In regard to his U/W activities—scuba diving or in a submersible—he feels, "Every dive is a new adventure, I still get a thrill every time."

Jack McKenney/Arts: Jack McKenney's second NOGI Award (he received one in 1977 for Distinguished Service) had to be awarded posthumously; he died in December of 1988.

McKenney's background includes being an early program director, instructor and guide at UNEXSO in the Bahamas as well as eight years at SKIN DIVER Magazine; four as editor. However, as his most recent NOGI Award indicates (Arts), he is best known for his underwater camera work. McKenney served as cameraman for several projects, including the *Andrea Doria* and Falkland Islands TV specials. But, it was his own films, where he had total creative control, that were his real passion. McKenney made 28 such films including *The Devilfish of El Bajo* (1982) and *The Bay of Dolphins* (1986), both of which won Cine Golden Eagle awards. Other notables include: *I'd Rather be Diving*, *Treasure Diving* and *Seven Wonders of the Diving World*, all produced for the Diving Equipment Manufacturers Association (DEMA). His final film was the highly acclaimed *Under the Emerald Sea*, shown as a Nature segment on PBS.

As an example of the esteem his films brought him, in January 1989 McKenney was posthumously awarded the first Reaching Out Award in arts by DEMA.

McKenney's films entertained us all and inspired many nondivers to take up the sport. These films also encouraged us to respect and preserve the marine environment. As another well known underwater filmmaker, Stan Waterman, put it: "Jack is now a part of the ocean that, during his lifetime, he brought to us with skill, poetry, humor and an intuitive sense of style and beauty."

TECHNIFACTS

By E.R. Cross



What is time? Before trying to relate to time and the diver, it might be good to take a look at just what time is and how it is measured.

Time can be many things. First, it is a basic concept dealing with the occurrence of events. It is also a physical quantity that can be observed and measured with a clock or watch operated mechanically, electrically or by some other physical means. *Webster's Third New International Dictionary* states (in one of nearly 50 definitions of time) that time is, "A period during which something (as an action, process or condition) exists or continues. Most of the timing needs of divers come under that meaning. Descents, decompressions, underwater excursions, etc., must all be *timed* for dive safety. Devices for measuring these elapsed times need to be accurate within a few seconds per hour.

Another definition of time is, "A point or period when something occurs: The moment of an event or occurrence." For example, "The dive boat will depart from the pier at 6:00 am." A point in time such as this usually must be accurate within a minute or so.

For safe diving an U/W watch or timer is absolutely essential. This important device has improved tremendously since the first U/W watch was introduced in the 1940s. But, how can you determine if your time is accurate? Will your time accurately measure your dive intervals? Will it tell you when to meet the dive boat? This Technifacts is designed to help you answer those questions and to make you aware of two radio stations that can help you keep accurate time.

THE TIME STATIONS

The two radio stations are WWV, in Ft. Collins, Colorado and WWVH, broadcasting from Kauai in the Hawaiian Islands. A related station, WWVB in Ft. Collins, transmits time and other information on a frequency (60 kHz) not available in radio receivers usually found in diving or other marine related activities.

Of equal importance to divers, WWV and WWVH transmit current marine storm warnings for the Atlantic and Pacific



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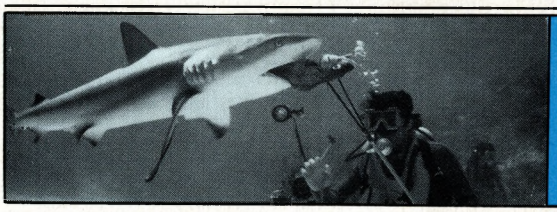
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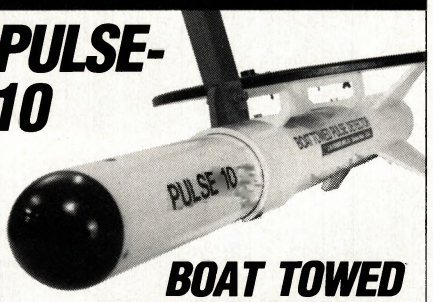


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TECHNIFACTS

Oceans—information that could help divers plan diving trips to specific storm free areas. The warnings are normally updated every four hours; more frequently under conditions such as the recent Hurricane Hugo.

These radio stations are operated by the National Institute of Standards and Technology (NIST—formerly the National Bureau of Standards), a division of the Commerce Department. The actual time keeping is by the National Measurements Laboratory, Time and Frequency Division, in Boulder, Colorado and is broadcast by WWV and WWVH of the Time and Frequency Dissemination Services.

These are busy radio stations. Services provided include time announcements, standard time intervals, standard frequencies, geophysical alerts, marine storm warnings, Omega Navigation System (ONS) status reports, UT1 time corrections and BCD time code. For divers, the time announcements and marine storm warnings are of particular interest.

ABOUT TIME

For many reasons there are several kinds of time. The kind of time used most frequently by most of us is standard time, which is sometimes altered to daylight savings time. There are also Greenwich Mean Time (GTM), Solar Time, Sidereal Time, Universal Time (UT1) and Coordinated Universal Time (abbreviated as UTC), to mention only a few. Each country also has its own expressions for different kinds of time.

Standard time is that kept within (approximately) any 15 degrees of longitude in an east and west direction from zero meridian at Greenwich, England. Minus time zones extend in an easterly direction to minus 12. These zones meet at the 180th meridian; the international dateline.

With relation to the sun the earth turns 360 degrees on its axis in approximately 24 hours, or 15 degrees of longitude (one time zone) each hour (360 degrees divided by 24 hours equals 15 degrees). Rotation is from west to east; i.e., Los Angeles (plus 8 time zone) will have sunrise two hours earlier than Honolulu (plus 10 time zone). Also, Sydney (in minus 10 time zone) will have sunrise two hours earlier than Manila (in minus 8 time zone).

In modern, quartz movement dive watches, time accuracy of one second error per day is not unusual. Hence, accurately timing any kind of elapsed time during a dive is possible. However, regardless of how accurate a timepiece is, keeping it within a minute or two of correct time may present problems. In any day a diver will encounter a dozen or more time indication devices. Probably all of them will indicate a time different from that shown by the diver's watch.

(Continued on Page 56)



SOUTHERN MONTEREY COUNTY

Untouched Reefs Off Big Sur Coast Offer Fantastic Diving

TEXT AND PHOTOGRAPHY BY BRUCE WATKINS

When most divers think about Monterey, the relatively small area including the Monterey and Carmel Bays comes to mind. These bays have many exciting dive sites but represent only a small percentage of the beautiful Monterey coastline. Divers seem unwilling to cross the magic line at Point Lobos to explore sites farther south and are missing a lot by not doing so; the "other Monterey" offers an incredible tapestry of untouched reefs with a healthy population of sizable game fish.

The coastline of southern Monterey County is more like that of Southern than Northern California, with wide sandy beaches, moderate hills and much less fog than points north. Here one finds a number of good diving areas with convenient access. At the town of Lucia the resemblance to Southern California ends as monolithic mountain faces jut up vertically from the surfline. Along this coastline are uncountable, fantastic dive sites, only a few of which have been explored. The problem is, of course, getting divers to the water. The cliffs of Big Sur may be awe inspiring to look at, but they make lousy diving access.

There are, however, a few rewarding dive sites sprinkled along the Big Sur coast that are accessible from shore with more than a little effort. Most involve a healthy hike down a bluff face, doing a giant stride off a rock terrace and knowing how to ride the swell safely back to shore. These are most certainly in the class of advanced dive sites, but those with the proper skill and training will enjoy some pristine diving.

In the past, these conditions have kept most divers away, but a wonderful thing has happened to the Monterey area in recent years. Owing to the increased size and affluence of the local divers the number and size of charter boats has grown by leaps and bounds. These new boats are fast, stable and capable of carrying divers great distances to Point Sur and beyond. Boats generally leave the Monterey marina at about 7:00 am and can have divers in the water off Point Sur by 9:00. Now you don't have to be a macho diver to experience the untouched reefs along Big Sur.

Jade Cove: The most southern of Monterey dive spots takes its name from the rich deposits of nephrite jade found here. Jade may only be collected below the high tide mark, a rule that must have been written with divers in mind. Park along the side of Highway 1, 10 miles south of Lucia and follow the one-third mile trail that crosses the meadow and



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You'll also learn how to use a hand-held decompression computer in ORCA's dive workshop. And preview the latest in scuba fashion at a show by Henderson.

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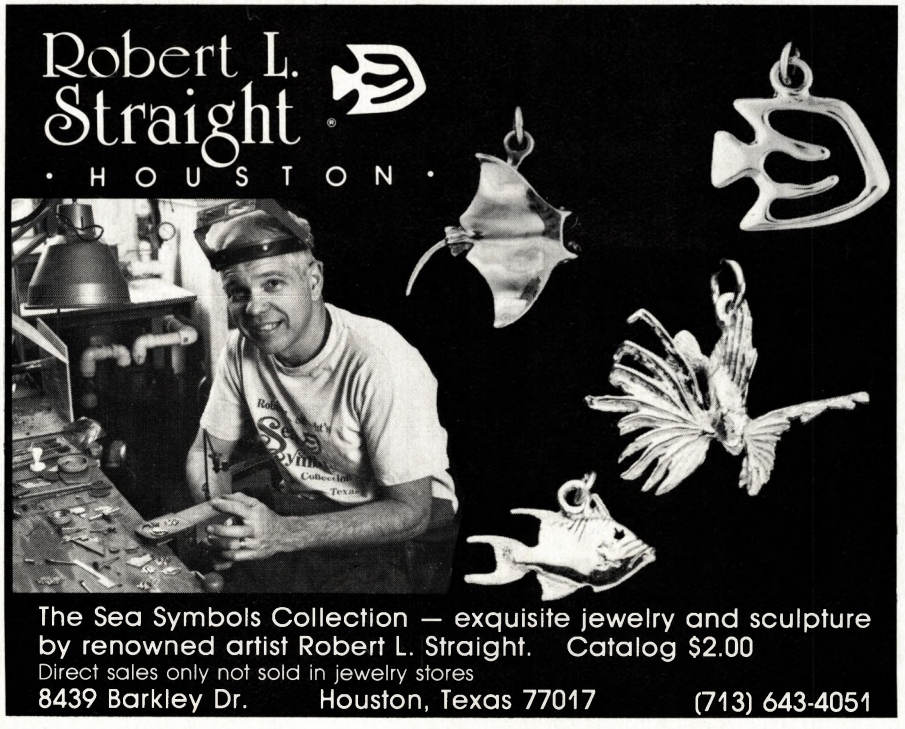
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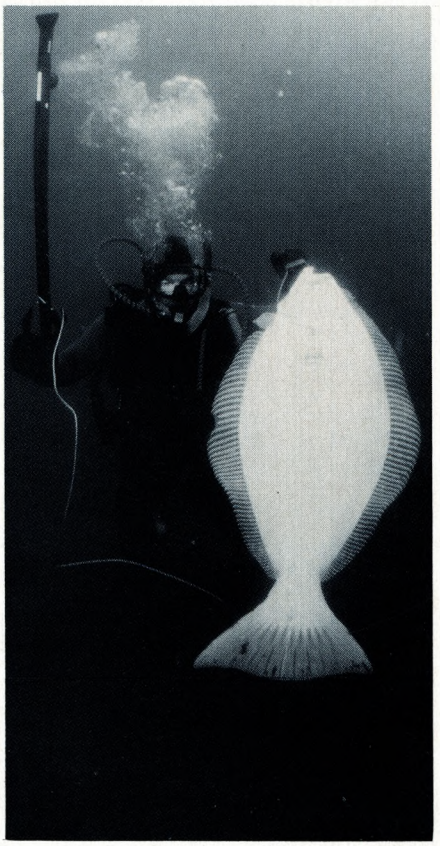
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SO. MONTEREY COUNTY

switchbacks down the steep bluff face. The area often has big surf, strong currents and reduced visibility owing to erosion of the serpentine cliffs. Diving here is one of the few cures for the dreaded Jade Fever and many divers come back



A diver displays a 30 pound halibut.

with sizable hunks of the semiprecious stone. Jade may be identified by its characteristic green color and hardness (it will not be scratched by a knife point). The hike back up the trail is strenuous even if you are not carrying pounds of jade.

Sand Dollar Beach: Park in the large lot nine miles south of Lucia and hike the one-quarter mile to the bluff and 100 feet down the well maintained trail and stairs to the beach or follow the poorly maintained trail to the point and climb the bluff. The near-shore beach has little to offer divers unless they are looking for sand

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dollars. There is a nice rocky area to dive along the south point of the cove where a healthy kelp bed, good invertebrate life and spearfishing may be found. This beach is one of the most protected in the area, but generally has reduced visibility.

Mill Creek and **Kirk Creek:** A pair of signs a mile apart mark a U.S. Forest Service picnic area and campground five miles south of Lucia. Follow the road down to a parking lot adjacent to the small beach and picnic area. A dive board or inflatable boat is needed to adequately explore this huge diving area. The bottom consists of rock patches separated by stretches of sand in 25 to 60 feet of water. The pinnacles rise 25 feet above the bottom and are covered with a colorful assortment of starfish, anemones and sponges. The spearfishing here is excellent and stringers of large lingcod, cabezon and assorted species of rockfish are common. In the sandy patches among the rocks, halibut in the 30 to 50 pound range are found in summer.

Limekiln Beach: This private campground and beach may be reached by turning east from Highway 1, two miles south of Lucia and following the road that passes under the bridge. This is another good spot to launch an inflatable boat, but beware the unpredictable surf that can easily flip a boat. The area has an extensive kelp bed with rocky patches separated by sand and has excellent spearfishing for lingcod and rockfish.



Sand Dollar Beach offers excellent protection from waves and is great for surf entries.

Partington Cove: Also known as **Smuggler's Cove**, this site is in the northern part of Julia Pfeiffer Burns State

(Continued on Page 52)



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SKIN DIVER MAGAZINE
1990
Bestseller Series
SCUBA REGULATORS

TEXT AND PHOTOGRAPHY BY GERI MURPHY

When experienced divers go shopping for new regulators, they are basically seeking three things: 1) smooth air delivery; 2) mouthpiece comfort and; 3) large air volume at depth when needed. Other trick features may be appealing, but these three performance values are essential.

It is little wonder then that the Conshelf SE2 is a serious candidate for any advanced diving enthusiast. This remarkable regulator scores high points in all three categories and is regarded as one of the best performers in the world today. This article will tell you why.

The first and most noticeable performance feature of the SE2 is the way it breathes—smooth and steady, regardless of depth or tank pressure. U.S. Divers engineers have dispensed with the classic problems that plague most high flow regulators. There is no chatter, no uncontrolled freeflow, no erratic inhalation resistance.

U.S. Divers has eliminated these problems by installing an ultra-sensitive balanced diaphragm valve in a very compact first stage. This unique diaphragm allows the first stage to deliver a steady flow at an even pressure regardless of whether the scuba cylinder has 3,000 or 300 psi.

Next, the engineers enlarged the intermediate pressure chamber, thereby developing an air reservoir within the first stage body. Air volume is U.S. Divers' secret weapon for smooth delivery.

The engineers then piped this large air volume through an oversized one-half inch diameter hose—direct to the second stage. This is where U.S. Divers stepped out in front of the pack. While the oversized hose is more expensive, the engineers felt it was vital to the performance of the SE2.

Finally, U.S. Divers enhanced the performance of the second stage by fitting the downstream lever with a nylon glide bearing. They also designed a curved flow vane that channels the air into the mouthpiece. The result is large volume airflow with reduced turbulence.

As any experienced diver knows, mouthpiece fit can make all the difference in comfort underwater. Prolonged submersion (two or three dives per day) tends to soften the tissue around the lips and gums. The slightest mouthpiece hardness or ill fit can cause painful abrasions and jaw fatigue. These are lessons that can only be learned underwater.

Concerned with diver comfort, U.S. Divers engineers set to work designing a radically different mouthpiece that would eliminate annoying abrasions. The result is the patented Comfo-Bite mouthpiece—a major step forward in regulator design. This unique mouthpiece utilizes the roof of the diver's mouth for added support and grip. It fits like a glove, yet feels solid. The engineers developed additional support by enlarging the regulator's exhaust tee and providing a natural chin rest. There is solid contact and support at two

U.S. DIVERS' CONSHELF SE2
THE PERFECT CHOICE FOR THE ADVANCED DIVER





Small and standard sized Comfo-Bites.

KEY FEATURES

- Balanced diaphragm first stage
- Enlarged first stage chamber
- Enlarged first stage port
- Enlarged ½" diameter air hose
- Second stage venturi air vane
- Adjustable first/second stages
- Patented Comfo-Bite mouthpiece
- Interchangeable color Box Tops
- Color hose protectors

COMPARISON OF U.S. DIVERS SCUBA REGULATORS

		FIRST STAGE					SECOND STAGE						
Model	Price	Internal Design	External Design	HP Ports	LP Ports	Environmental Seal Kit	Hose Diameter	Case Cover	Colors	Valve Design	Mouthpiece	Warranty	Comments
Pro Diver #1021	$380	Balanced diaphragm	Circular, angled ports	1	4	Optional	½" oversize	Noryl	10	Downstream lever action	Comfo-Bite	Lifetime	High performer with all the bells and whistles.
Conshelf SEA #1060	$335	Balanced diaphragm	T-shaped	2	4	Optional	½" oversize	Noryl	10	Downstream lever action	Comfo-Bite	Lifetime	Distinctively shaped first stage; loaded with HPs and LPs.
Conshelf XIV #1081	$335	Balanced diaphragm	Compact	1	4	Optional	⅜" standard	Chromed marine brass	1	Downstream lever action	Standard	Lifetime	Classic metal second stage.
Conshelf SE2 #1074	$310	Balanced diaphragm	Compact	1	4	Optional	½" oversize	Noryl	10	Downstream lever action	Comfo-Bite	Lifetime	Most popular model. Best performer in navy tests.
Conshelf 21 #1043	$275	Balanced diaphragm	Compact	1	4	Optional	⅜" standard	Noryl	10	Downstream lever action	Standard	Lifetime	Economy model; an old time favorite.

points on the diver's face instead of one.

U.S. Divers further enhanced its Comfo-Bite mouthpiece by producing it in two sizes—standard and small. It is available as an accessory in either clear silicone or black silicone, depending upon your personal preference.

The most important performance value of any regulator is its ability to deliver large air volume at depth, when needed. This feature can be critical to the diver's personal safety—especially in emergencies such as swimming against an unexpected current at 100 feet. In situations such as this, you want lots of air.

Large air volume delivery is where the SE2 shines. In 1987, the Navy Experimental Diving Unit (NEDU) tested and evaluated 52 regulators. It awarded the SE2 a Class A rating and ranked it as the best performing regulator tested. On a scale of 0 to 6 (with 6 being excellent), the Conshelf SE2 was ranked 5.32. This test provided conclusive proof that the SE2 can deliver the goods.

U.S. Divers made one more clever decision to ensure the SE2's success as the bestselling regulator of its time. It made it affordable. Of the five regulators being offered by U.S. Divers in 1990, the SE2 is priced right in the middle at $310. SKIN DIVER rates this model the "best value" in the U.S. Divers line.

If you are an experienced diver seeking to upgrade your scuba gear, the Conshelf SE2 certainly deserves consideration. And, if you are a new diver shopping for your first regulator, why not start out with the best?

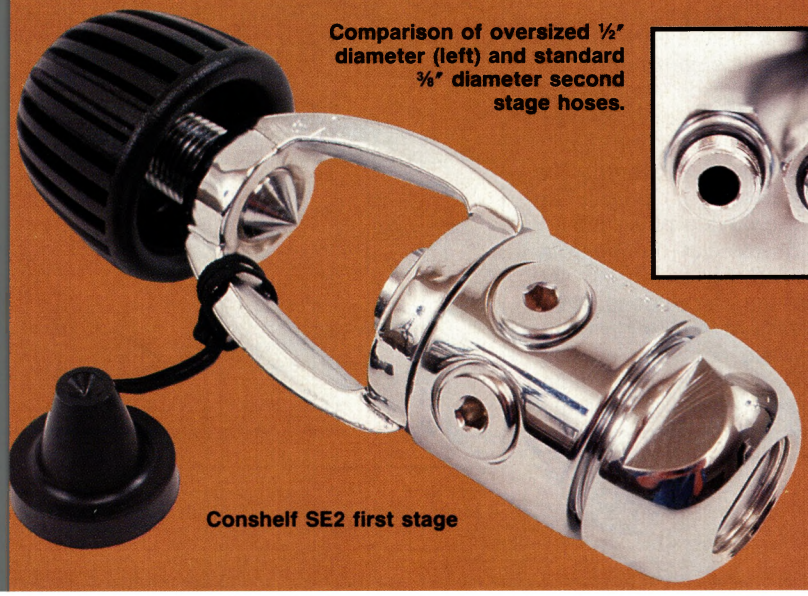
If you would like to know more about the Conshelf SE2, stop in at your local Aqua-Lung dealer. For the name of the dealer closest to you contact U.S. Divers, 3323 W. Warner Ave., P.O. Box 25018, Santa Ana, CA 92799-5018; telephone (714) 540-8010.



Conshelf 21 Octopus second stage.

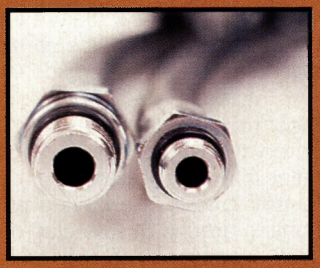


Data Pro DS2 instrument console.



Conshelf SE2 first stage

Comparison of oversized ½" diameter (left) and standard ⅜" diameter second stage hoses.



With enhanced performance features and a one-half inch diameter second stage hose, the Conshelf SE2 offers smooth air delivery and large air volume at depth when needed. With the Comfo-Bite mouthpiece and a chin rest designed into the exhaust tee, the SE2 is very comfortable.

OPTIONAL ADD-ONS

- Octopus $118
- Day-Glo octopus $124
- Data Pro 2 console $195
- Data Pro DS2 console $345
- Pro Compass Module $58
- Data Scan 3 dive computer $725
- Box Top $5.75
- Hose protector (½") $4.25
- Hose protector (¼") $4.25

EAST COAST WRECKS

NEW JERSEY'S PINTA

BY HERB SEGARS

It was one minute after sunset on Tuesday, May 7, 1963. The weather was clear with a southwest wind blowing at 17 knots, seas running three to four feet and visibility of 15 miles. The Dutch motorship, *Pinta,* was on its way to Port Newark, New Jersey with a cargo of Nicaraguan lumber, having made an intermediate stop in Norfolk, Virginia. At 7:59 pm, five miles east of Elberon, New Jersey, approximately 35 miles south of the Battery, the *Pinta* collided with the 7,547 ton British freighter, *City of Perth.* The *City of Perth* had left the Todd Shipyards in Brooklyn, New York, earlier in the day bound for Adelaide, Australia.

At the time of the collision the Coast Guard reported receiving the following message from the *City of Perth*: "The *City of Perth* struck *Pinta,* registered Rotterdam. This ship and Dutch vessel making water. Require immediate assistance."

The Coast Guard dispatched five helicopters and two cutters to the crash site. At the same time, it received an SOS from the *Pinta*: "Dutch vessel taking water, requires immediate assistance."

At 8:18 pm, the *City of Perth* radioed the Coast Guard: "*Pinta* crew abandoning ship and rowing to board me. *Pinta* listing to port."

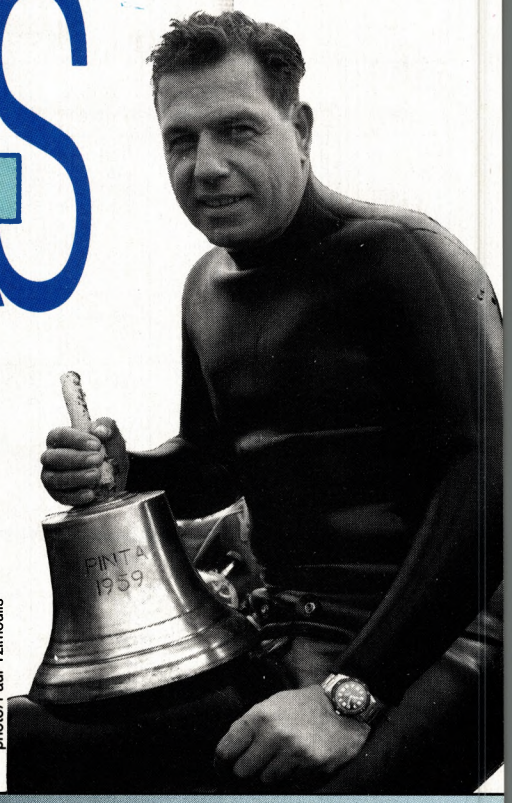
At 8:46 pm, another message was received from the *City of Perth*: "No further assistance needed." It went on to say that the *Pinta's* crew had been taken aboard safely and the Dutch ship had slipped below the surface in about 90 feet of water.

Initially, both ships had been reported taking on water from hull damage. Despite a 14 foot gash in her bow, the *City of Perth* was found to be seaworthy and proceeded back to New York Harbor under her own power. Both ships had radar and the reason for the collision was a mystery. There was no Coast Guard investigation as the incident occurred in international waters, where the Coast Guard has no authority; both vessels flew foreign flags; and the sunken vessel posed no hazard to navigation.

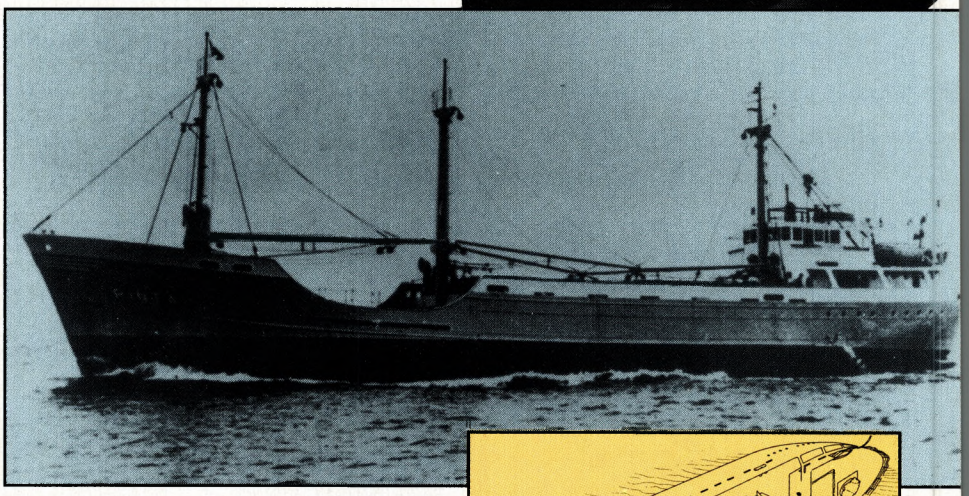
Shortly after the *Pinta* reached its final resting place, sport divers began visiting her. Some of the more interesting artifacts brought to the surface were the ship's bell, the propeller and some artificial flowers from the captain's cabin. Pieces of the 12 x 12 inch timber in the hold were recovered and turned into mantelpieces and shelving. Today, most collectible artifacts are gone but the *Pinta* still provides great sport for divers.

The *Pinta* settled to the seafloor on her port side. She lies at a 90 degree angle to the bottom with the length of her running north to south and her deck facing toward shore. She rises off the bottom to within 55 feet of the surface.

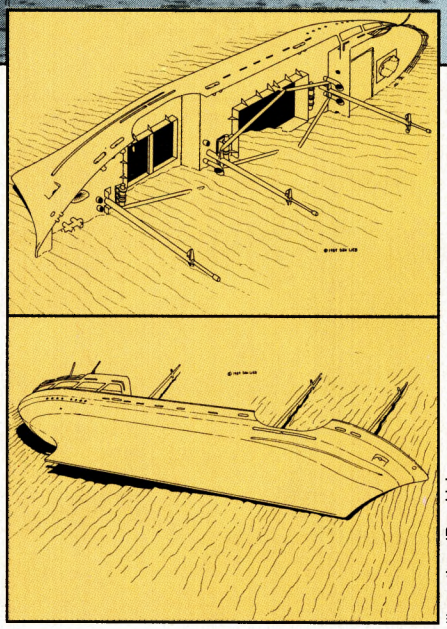
In the nearly 27 years that have passed since the *Pinta* reached the bottom, there have been a few noticeable changes. The first portion of the structure to disappear was the wheelhouse, the construction designed to withstand topside weather and not the corrosive effects of seawater. Most recently, at least half of the *Pinta*'s cargo of lumber has disappeared. The latter is a mixed blessing for divers. The lumber area was always a prime lobster hunting ground. It was also a dangerous area. Hoping to find a prize lobster, divers ventured into the cargo areas of the *Pinta.* Sudden shifts of the lumber could leave a diver pinned and doomed. The lumber's disappearance has made entry into the cargo hold much safer but has eliminated many of the hiding spots for the Northeastern diver's favorite quarry.



photo/Paul Tzimoulis



photo/courtesy Steve Bielenda



illustrations/Dan Lieb

Top: Jack Brewer with the bell from the *Pinta*. Above: The *Pinta* underway. Right and below: The *Pinta* lies on her port side.

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Caribbean Holds Riches Of Dreams

T.W. Anderson, president of Pacific Eagle Treasure Salvors, Inc., a public company based in Boulder City, has invested more than a quarter of a million dollars so far in hopes of striking it rich beneath the sea. After many months of preparation for a treasure-seeking voyage, Anderson says his group is finally ready to start the search. The Atocha, a Spanish galleon carrying more than $400 million worth of gold, jewels and valuable artifacts, was the first ship of its kind whose riches were fully recovered from the Caribbean. That huge area has been narrowed down to about five square miles in which Anderson anticipates finding the Santiago El Grande, which experts believe to be one of the 10 richest shipwrecks in the Western Hemisphere. According to records, the Santiago El Grande was carrying 240 tons of silver bars and ingots, 1,850,000 pesos in silver coins, 2½ tons of gold in ingots, disks and coinage, 12 chests of pearls, 27 chests of emeralds and 127 chests of products from China. The $800 million cargo, which represented three years' revenue for the king, was headed for Spain. The ship set sail on Sept. 10, 1765, from Havana and made good progress for the first 24 hours before it was struck by a fierce hurricane, records indicate. Spanish salvors worked for three months trying to recover the treasure. They came up with less than 5 percent before work ceased during the hurricane season, after which no trace of the shipwreck could be found. Anderson is optimistic that his crew can find the Santiago as well as other sunken ships within the lease area. With the use of high-tech equipment, he says the search will proceed more quickly than usual. Anderson says he can reduce the capital risks usually associated with treasure salvage ventures by employing modern equipment not available in the recent past such as sonar, sensitive magnatometers and ground-penetrating radar capable of picking up small metallic objects under the ocean floor. He says it took Fisher 17 years to find the Atocha, primarily because inefficient searching methods were used during the first dozen years or so. Soon after sophisticated diving equipment was implemented in the 1980's, divers found a trail that eventually led to the treasure. "It's highly speculative but it's a heck of a lot of fun," he says.

For Further Information:
Write: Tom Anderson
Pacific Eagle Treasure Salvors, Inc.
540 Lake Terrace Drive
Boulder City, Nevada 89005
or call Robert Leigh:
1-800-321-6404

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Although there is less lumber, the hold area can still be extremely hazardous, especially in the stern where there are timbers wedged in overhead. The timbers that were underneath are gone and any sudden shift now would be a catastrophe for a diver below them.

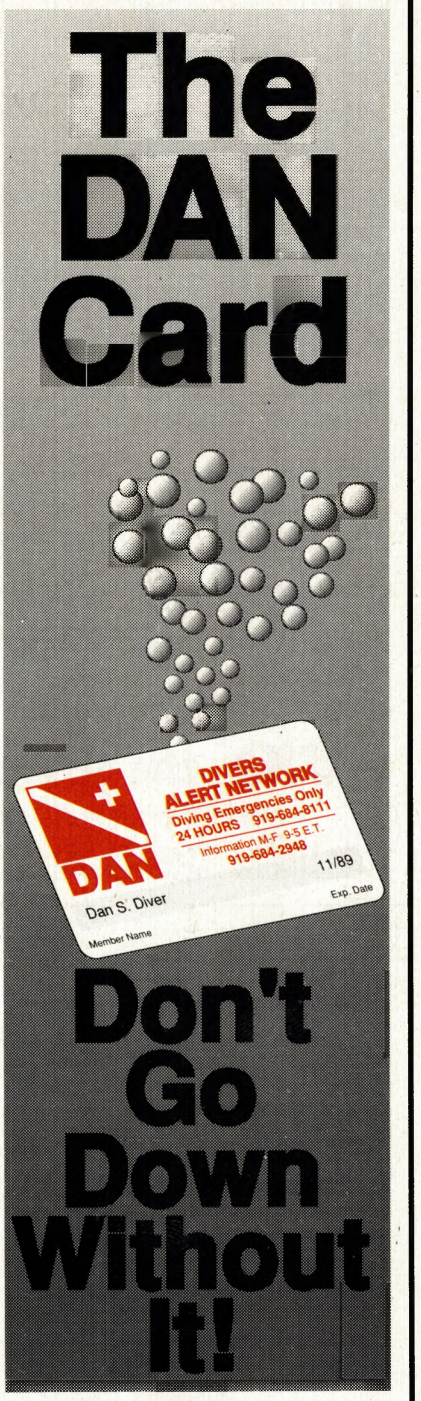
The *Pinta* is 194 feet long and has a beam of 31 feet. Much of the vessel is above the sandy bottom. The hole in its hull from the collision is on the ship's port side, buried beneath the sand. Finding the bow and the stern of the ship underwater is very easy. Once on the wreck, drop over the edge of the hull and turn toward the deck. As you face the deck, the bow will be to your left and the stern will be to the right. In the bow area, divers will find portions of the *Pinta's* masts and various assortments of deck machinery. Moving along the deck toward the stern, divers encounter openings in the cargo area. (Even with the absence of much of the lumber, penetrating the shipwreck is a dangerous undertaking that is not recommended.) Once at the stern, you can round the corner and view the hull area where the propeller once was. The hull of the *Pinta* is completely covered with marine growth, the majority of which is frilled anemones; beautiful subjects for the underwater photographer.

In many areas on the deck and especially on the masts, there are colonies of blue mussels, a tasty seafood delight. The art of collecting mussels requires no more than a mesh bag and the diver's effort to pull them from the wreck and deposit them in the bag. The best mussels are those found off the sandy bottom, because these tend to have less sand within the shell. Care should be taken by the mussel collector not to underestimate the additional weight and bulk imposed by a filled mesh bag. A small lift bag is a great method of bringing a catch to the surface.

This past October, toward the end of the New Jersey diving season, I had the opportunity to dive the *Pinta* from the charter dive boat *Venture III* with a group of divers from the Shore Aquatic Club of Sea Girt, NJ. It gave me a chance to become reacquainted with the wreck and also to experience the diversity of the goals of those who dive it. Our group totaled 15, with six distinctly different disciplines. Bill Loughran, Jr. from Sea Girt, NJ was on his sixth trip to the *Pinta* and had used his entire dive on each trip to try and remove a porthole frame from an interior surface of the hull. With hammer, chisel and custom modified nutcracker in hand, he ventured into the innards of the wreck, tethered to the outside world with a penetration line. His 25 minute accomplishment was the removal of two more nuts. He had high hopes that one or two more dives would be required to remove his prize. Even with great coaxing from the entire clientele of that day's dive, he would not reveal its location.

Tony Cianci from Belmar, NJ, readied

(Continued on Page 140)



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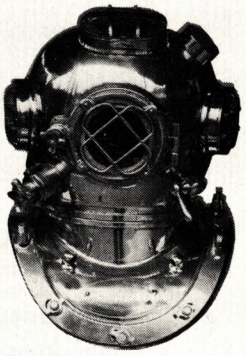
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SCUBA MAGAZINE | FISHEYE VIEW DIVERS MAGAZINE | FLORIDA SCUBA NEWS

SO. MONTEREY COUNTY

(Continued from Page 47)

Park, 36 miles south of Carmel. Follow the fire road that begins on the south side of the bridge over Partington Creek and drops 200 feet to a parking area. Walk 200 feet through a 110 foot long tunnel and enter the water from the rocky point. The diving here is quite good with a series of rocky ridges and pinnacles that jut up from the 30 to 60 foot bottom to within 20 feet of the surface. The rocks are painted with yellow and orange encrusting sponges and corals, and spearfishing for lingcod is excellent. A 70 foot long cave passes through the point itself but is quite dangerous owing to the heavy surge. This is an advanced dive since the cove offers little protection and there is

MONTEREY DIVE BOAT OPERATIONS

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Delphi	(408) 476-5201
First Class	(916) 929-4020
Holiday II	(408) 885-4849
Silver Prince	(408) 394-4235
Scuba Do	(408) 633-5659
St. Thomas Diver	(209) 449-8888
Xanadu	(408) 475-3483
Xeno	(408) 426-7376



Big Sur is easily explored from a boat.

no easy way out of the water in a heavy swell. Divers must obtain a $25 per group permit from Pfeiffer Big Sur State Park.

Diablo Pinnacles: Two rocks that reach from a 100 foot bottom to the surface are just north of Point Sur and can only be reached by boat. The rocky bottom surrounding the pinnacles is marked with deep canyons filled with large rose anemones and some pink and purple hydrocorals and the area supports a hefty concentration of lingcod and cabezon. Because of their proximity to open water, pelagic species such as ocean sunfish and blue sharks are often seen here.

Soberanes Point: Park at the turnout seven miles south of Carmel in Garrapata State Park, hike a short distance to the bluff that is 10 feet above the water and

scramble down to the waterline. Be careful getting off and onto the rocks. The one-third mile swim to **Lobos Rocks** takes you over a series of nice ornamented rocky ridges. At the rocks there are deep canyons and walls that plunge steeply to more than 100 feet. They are covered with an incredible carpet of invertebrate life. Red *Corynactis* anemones and pink and purple hydrocoral make this a colorful spot to dive. Large game fish and some pelagic fish are found here as well; look for leopard sharks on the sandy bottom. This spot is most often dived from charter boats but advanced divers may reach the rocks from shore.

Yankee Point: At one time you could dive this site from shore, but now, no trespassing signs keep divers from the water. Fortunately, this site is frequented by charter boats. Here rocky fingers jut out from the shore in 40 to 70 feet of water and provide interesting terrain.

DIVING AND CAMPING INFORMATION

Point Lobos State Reserve
(408) 624-4909
Pfeiffer Big Sur State Park
(408) 667-2315
Los Padres National Forest
(408) 385-5434
Limekiln Beach Redwoods
(408) 667-2403

Monterey's dive boats are continuing to discover new sites. These are untouched and fine examples of just how beautiful the underwater world can be. With the price of passage, even novice divers can experience and enjoy these pristine underwater gardens.

HENDERSON ISLAND

Henderson Island, a 12 square mile uninhabited colonial island in the Pacific near famous Pitcairn Island, has been named a World Heritage Site.

Henderson captured a spot on the list because of its geography and unique animal and plant life—much of which is found nowhere else in the world. Some of the most well known species include the Henderson rail (bird), a lorikeet, a fruit dove, four land snails and a tree daisy.

Michael Brooke of Cambridge University's zoology department has applied to the British High Commission in New Zealand for permission to mount a scientific expedition to Henderson. If the expedition is approved, scientists from Britain, Australia, New Zealand and the United States will serve three month periods studying the island's geology, birds, insects and plants. An archaeologist may accompany the expedition as it is thought early Polynesians may have inhabited Henderson.

At D.I.T. you're on . . .

THE CUTTING EDGE



Photo by: Mike Massey, DIT

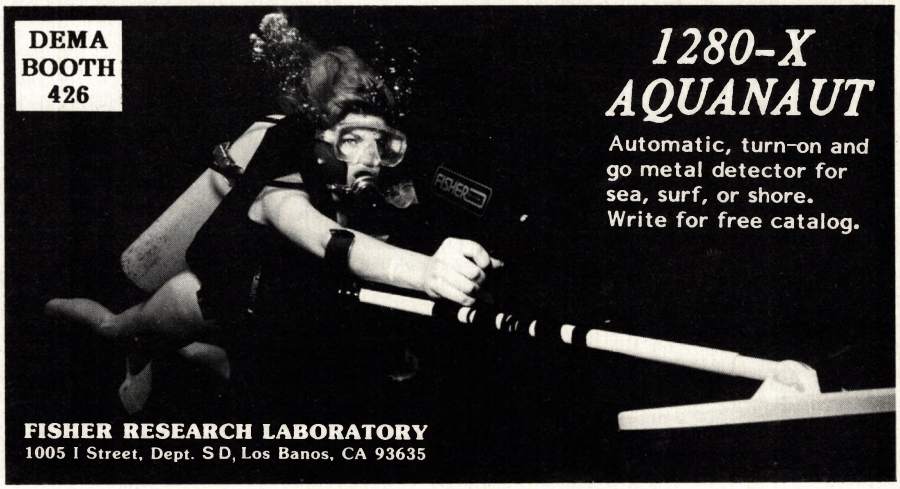
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SDM'S U/W VIDEO COURSE

EDITING ON A SHOESTRING

TEXT AND PHOTOGRAPHY BY JIM CHURCH

Yes, you can do simple video editing without fancy, expensive accessories. If you're a beginner with a camcorder, television set, music source (such as a tape or CD player) and a "plain vanilla" VHS VCR without special editing features, this lesson will give you some valuable ideas.

EDITING IN CAMERA

Editing in camera is quick and dirty—you shoot each scene in its desired length and sequence. Post-shooting editing chores are eliminated and the playback tape is first generation (an original videotape). However, shots must be made in sequence and without serious mistakes. What you shoot is what you get! Playback is easy: Attach the cable (supplied with the camcorder) between the camcorder and television set and play the tape.

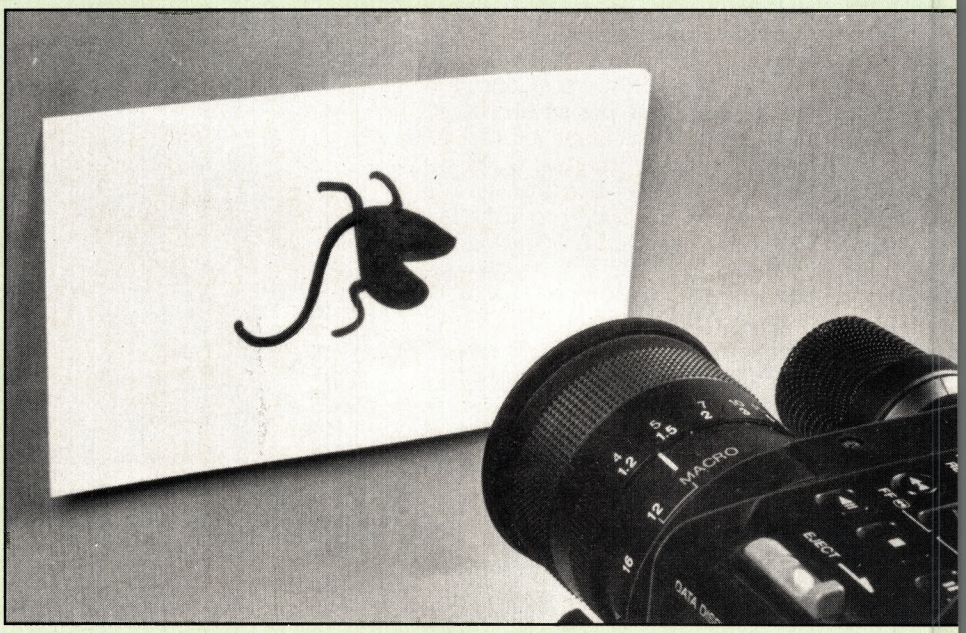
INSERT EDITING

Modern camcorders have an "insert editing" function that allows you record a new scene over a scene already recorded. (The insert replaces part of an existing scene; it doesn't add to the length of the recording.) Inserts can be shot with the camcorder or can be copied to the camcorder from another camcorder or VCR. Thus, hand-lettered or typed titles or scenes from another videotape can be added. The advantage of insert editing is that you can add new views of the subject (or cover over mistakes). If the insert is shot with the camera, the videotape is still first generation.

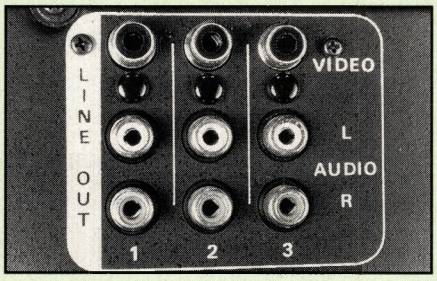
Insert editing is easy. A camcorder with this feature will have a switch that allows you to "tell the memory" exactly where the insert shot is to start and stop.

TITLING IN CAMERA

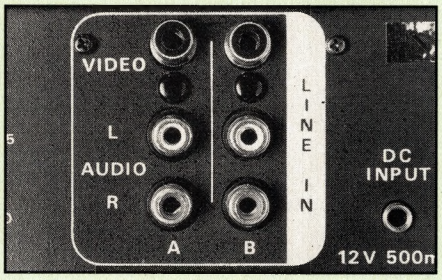
Some camcorders have a built-in titling feature. You can shoot one or more titles, which the camcorder stores in memory (see shooting artwork, below). Later, after shooting your video story, you can activate the titling option. The title(s) will be superimposed over the picture. As with insert editing, you end up with a first generation tape.



Shooting artwork, titles or photos is easy if the camcorder has a macro mode. Some camcorders have an attachment that holds pieces of cardboard in front of the lens.



To send signals from this unit, plug appropriate cables into the line out holes.



To receive signals into this unit, plug appropriate cables into the line in holes.

SHOOTING TO EDIT

You may plan to edit your videotape—by delete or assembly editing—while copying from the camcorder to the VHS. This reduces the stress of editing in camera with unpredictable subjects. You can shoot scenes in any sequence and rearrange them later.

When shooting to edit, start shooting each scene before the important action begins and stop shooting a few seconds after the action ends. Later, when editing, you can decide exactly where each scene will begin and end. If you shoot too tight (as with editing in camera), scenes will be difficult to edit.

DELETE EDITING

You may plan to edit in camera, but often end up delete editing. You edit by deleting unwanted portions of the original videotape while copying the tape. It works as follows:

1. If the camcorder has an edit switch (often inside the lithium battery compartment), set it to edit.

2. Attach a cable from the video out of the camcorder to the video in of the VCR.

3. Attach a cable from the VCR to the television set. Connecting the VCR to a standard television usually requires a single RFU cord. With a TV/monitor, separate RCA cords for video and audio can be used for better reproduction.

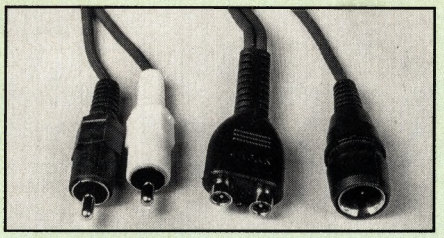
4. Turn the TV on and set for channel 3. Turn the recording VCR on first and run it in the record mode for about ten seconds. Then, press the pause button. Run the camcorder in playback and watch the image (from the camcorder) on the televi-

sion screen. To start recording on the VCR, press the pause button; the image you see on the screen is being recorded.

5. To delete unwanted scenes, press the pause button on the VCR. You will still see the video image being played by the camcorder, but the VCR won't be recording. To resume recording on the VCR, press its pause button again.

Delete editing will take some practice. You need to see if the recorded image starts before or after you anticipated. If you want to start recording from the camcorder immediately, cue the camcorder (find the exact place on the tape where you want to start). Then, press the pause buttons of both machines simultaneoulsy.





Above: Most cords needed for simple editing are furnished with the camcorder. Left: Camcorders have outputs for both audio and video. Cables can be attached to other camcorders or VCRs to copy tapes.

ASSEMBLY EDITING

Assembly editing is similar to delete editing. You rearrange the order of scenes recorded within the original tape and can select scenes from different tapes as you make an edited copy. Pause the VCR while you run the tape in the camcorder forward or backward (or change tapes) to find the next scene.

ADDING MUSIC

If your VCR has an audio dub switch, adding music to an edited tape is easy. Proceed as follows:

1. Attach a cable from the camcorder's video out to the VCR's video in.
2. Attach a cable from the music source's audio out (or line out) to the VCR's audio input.
3. Attach a cable from the VCR to your TV set.
4. Press the VCR's play and audio dub and the music source's play.

You will see the video image on the TV and will hear the sound (which is being recorded by the VCR) through the TV speaker. If the music source has a VU meter, use it to adjust its output and use the TV volume adjustment to adjust the listening volume.

It may take a few trial runs to find the optimum sequence for pushing control buttons with your particular equipment and to find the exact playback setting on the music source.

If your VCR doesn't have an audio dub function, but has separate inputs for audio and video, run a cable from the camcorder's video out to the VCR's video in and another cable from the music source's audio out (or line out) to the VCR's audio in. If you are delete or assembly editing, fade the music down each time you pause the VCR and fade in again each time you resume recording on the VCR.

VIDEOTAPING SLIDE SHOWS

While copying devices are sold to transfer slides (and movies) to videotape, you can shoot off the wall. A regular projection screen can be used, but a large sheet of white poster board attached to a wall is often best. The surface must be free of imperfections (avoid plastered surfaces) and reflections. Your results won't be studio quality, but the videotape provides an easy way to show your slides. The basic procedure is as follows:

1. Set up the slide projector and white poster board.
2. Mount the camcorder on a tripod (or other firm support), just above and behind the projector.
3. Adjust focus, shutter speed, color balance, sensitivity, iris. Note: If the TV picture has too much contrast, place a light at the rear of the room (or adjust window blinds) so some ambient light falls on the paper screen.
4. Turn the camcorder on and project the slides.

If you want the finished tape to be recorded on the 8mm tape in the camcorder, attach a playback cable from the camcorder to the TV set so you can monitor the image on the TV screen. Some camcorders have an audio in that allows you to add music from a separate sound source while recording. If not, use the built-in microphone as follows: Locate the camcorder as far away from the slide projector as possible. Place a speaker (from the separate sound source) close to the camcorder microphone. Turn the volume up loud enough so it overpowers the projector noises, but doesn't distort the sound.

If you want to record directly on your VHS VCR (to avoid having to copy the tape from 8mm), attach a cable from the camcorder's video out to the VCR's video in. To add music, attach a cable from the music source's audio out (or line out) to the VCR's audio in. Attach a playback cable from the VCR to the TV set so you can monitor the image and sound with the TV.

HELPFUL HINTS

When shooting artwork, slides or movies adjust the camcorder's focus, shutter speed, color balance and sensitivity (if it has a sensitivity switch) as you watch the image on a TV screen. Run a playback cord from the camcorder to the television set. While the camcorder instruction manual will make recommendations for these settings, lighting conditions will vary and seeing the image on the TV screen is the final test. With fluorescent lighting, a shutter speed of 1/100 second or higher may be needed to eliminate image flickering.

With a standard television, the cable will have a single RFU connection that attaches to an RFU input on the television. If you have a TV/monitor (which has separate inputs for audio and video). You can use an RCA cable from the camcorder's video out to the TV/monitor's video in.

STILL PHOTOS AND ART

You can easily videotape still photographs, artwork and hand-lettered or typed titles. You can shoot photos either at the beginning of a new videotape, at the end of a preshot tape or you can use the insert editing function.

Some camcorders may have an attachment for holding small pieces of cardboard (for typed or hand-lettered titles) in front of the lens. However, let's assume you don't have this feature, or your artwork is too large for the attachment. Proceed as follows:

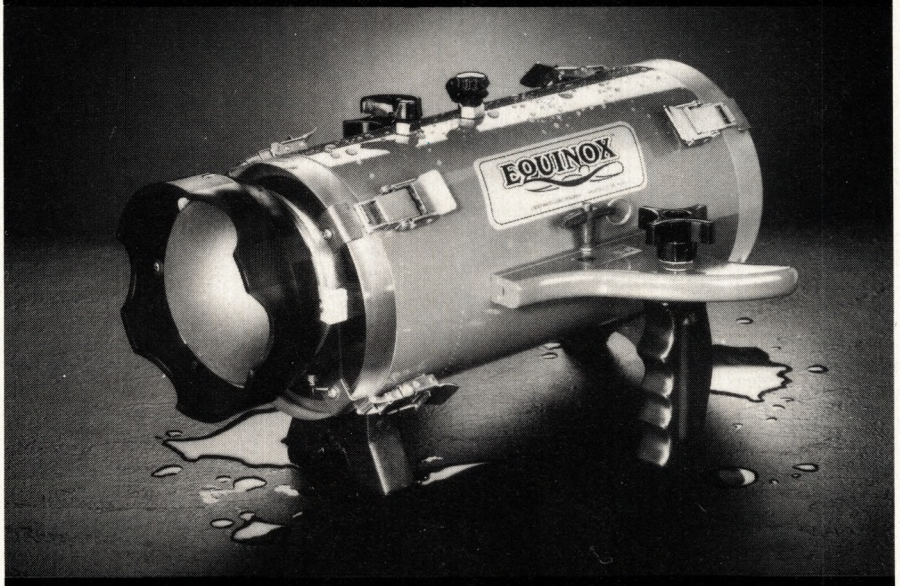
1. Attach the photo or artwork to a flat surface, such as a small bulletin board.
2. Aim the camcorder at the photo or art work.
3. Attach the camcorder to the TV set with a cable so you can see the image as you adjust focus, shutter speed, color balance, sensitivity and iris.
4. Shoot the photo or art.
5. To add narration, speak close to the built-in microphone as you shoot.

A tripod is best for holding the camcorder steady, but you can place it on a stack of books on a table. Just be careful not to knock it over!

CONCLUSIONS

Some of the editing techniques discussed in this lesson are admittedly crude. You can produce much better U/W video movies if you add sophisticated editing equipment. However, my purpose has been to get you started with simple video editing. Also, because your equipment may differ from mine, you may need to modify some procedures slightly. Check the owner's manual.

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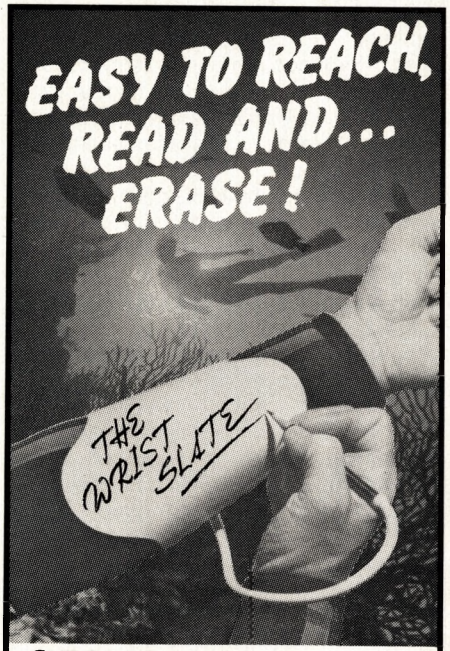


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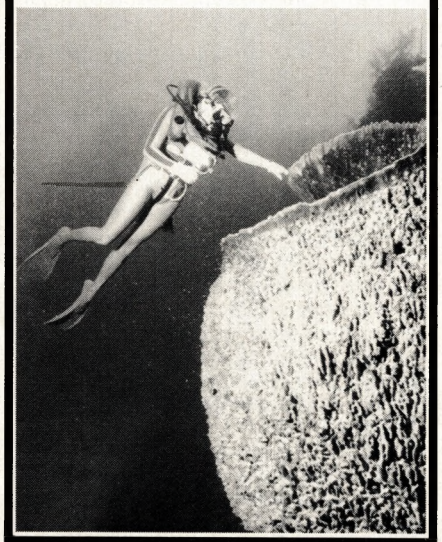
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TECHNIFACTS

(Continued from Page 44)

Keeping a timepiece set to exact time is where radio stations WWV and WWVH enter the picture.

KEEPING ACCURATE TIME

Prior to 200 years ago time could not be kept accurately enough to determine longitude at sea. At that time the first chronometers were developed in England for sea-going use. Captain Cook was the first navigator on an extended voyage who had such instruments. This first use of chronometers was the principal element that made Cook a great explorer. Without them his positions would have been as inaccurate as those of the men who preceded him.

The accuracy of dive watches today compares to Cook's chronometers as the chronometers did to sand filled hour glasses. Divers have an additional advantage of being able to keep their watches set within a second or so of Coordinated Universal Time (UTC), generally considered the equivalent of the GMT of old. This is possible because the NIST atomic clock NBS-6 at Boulder is used by WWV and WWVH to maintain a check on their own clocks, from which time signals are generated and sent.

Strictly speaking, the atomic clock NBS-6 is not really a clock. Rather, it is a cesium-beam-tube resonator used in conjunction with other instruments to generate pulses that can be converted into time signals. NBS-6 cost about $300,000 in 1976 and keeps time with an accuracy of one second in 370,000 years. Obviously, divers do not need that degree of accuracy. Thousands of workers and industry time users do and the diver can take advantage of this accuracy by tuning in a radio or telephoning.

Both radio stations WWV and WWVH transmit time signals continuously on radio frequencies 2.5, 5 and 15 mHz. WWV also transmits on a frequency of 20 mHz. All transmissions on 5, 10 and 15 mHz are at 10 kw of radiated power. WWV transmits on 2.5 and 20 mHz at 2.5 kw and WWVH transmits on 2.5 mHz at 5 kw radiated power. Antenna design and frequency modulation give nearly worldwide coverage of these time signals.

No special radio or code knowledge is required to get and apply accurate time from WWV and WWVH. Voice announcements are made from both stations once every minute. To avoid confusion as to which station is being received, a man's voice is used on WWV and a woman's on WWVH. WWVH announcements occur first, at 15 seconds before each minute; WWV announcements 7.5 seconds before the minute. The voice announcements are not broadcast live but are prerecorded. Don Elliot of Atlanta, Georgia is

the voice heard on WWV, Jane Barbe, also of Atlanta is heard on WWVH.

Time signals can also be obtained by telephone. By calling (303) 499-7111 (a Boulder, Colorado number) you will hear live broadcasts as transmitted from WWV. Similar time of day broadcasts from WWVH can be heard by dialing (808) 335-4363 (a Hawaii number). These are long distance calls except when originating within local areas.

WEATHER INFORMATION

Weather information about major storms in the Atlantic and eastern north Pacific are broadcast by voice from WWV at 8, 9 and 10 minutes after every hour. Similar storm warnings covering the eastern and central north Pacific are given by WWVH at 48, 49 and 50 minutes after the hour. An additional segment of time (at 11 minutes after the hour on WWV and 51 minutes on WWVH) may be used to advise of unusually widespread storm conditions. These messages may be used to learn of storm threats in areas of interest. Storm advisories are updated every four hours.

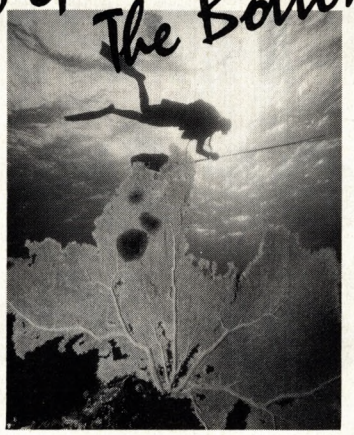
Radio stations WWV and WWVH have no control over the weather information transmitted. For information or to comment on the contents or reception of the weather information call or write Director, National Weather Service, Silver Springs, MD 20910.

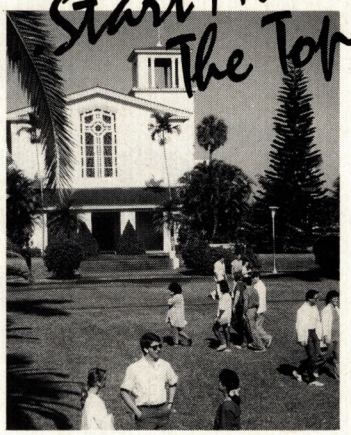
Arrangements can be made by small groups (four to eight people) for guided tours of radio station WWV or WWVH by contacting the engineer in charge. For WWV (and WWVB), contact Engineer in Charge, NIST Radio Station WWV, 2000 East County Road 58, Ft. Collins, CO 80524; (303) 484-2372. For station WWVH, contact Engineer in Charge, NIST Radio Station WWVH, P.O. Box 417, Kekaha, Kauai, HI 96752; (808) 335-4361.

As mentioned previously, these radio stations are busy places. When I visited WWV in September 1989 the entire staff for both WWV and WWVB consisted of Jim Maxton, engineer in charge; Matt Deutch, assistant engineer; Chuck Snyder, technician; and Art Trevarton, maintenance technician. This small staff keeps the radio stations on the air, the time accurate and the 390 acre antenna farm (ten huge antennas) and miles of coaxial cable neat and operational.

Jim Maxton told me, "We like to receive worldwide reports on the reception of our transmitted information." To be valuable to Jim and his staff, reports should be for a period of time, not just a single reception. Report on date, time of day (or night), quality or reception, your location and any other information that will help the engineers improve their transmissions. Send reports of WWV reception to the Colorado address; reports on WWVH to the Hawaii address.

Until next month—have a safe and accurate time.





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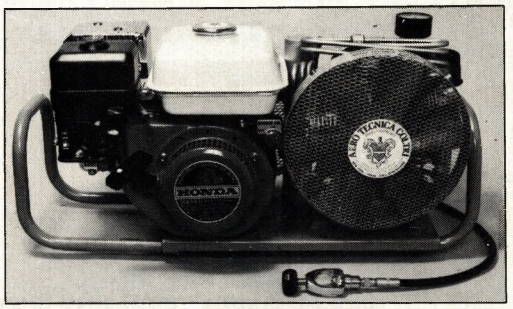
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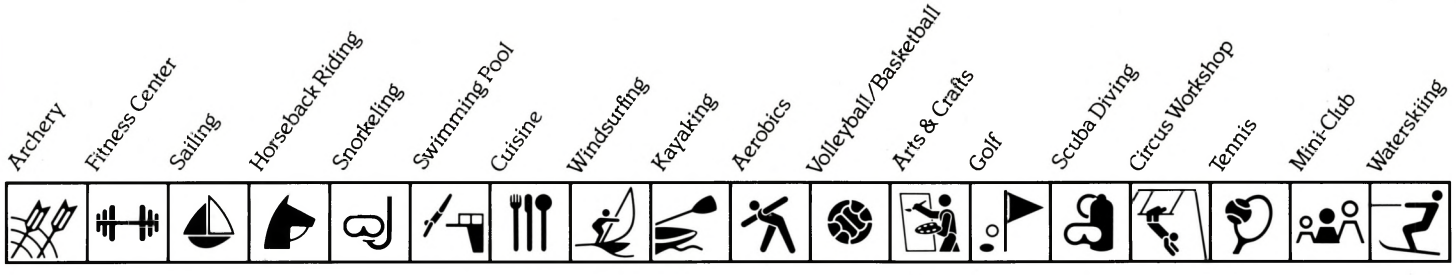
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Activities vary by village; some require an additional charge and must be booked in advance. © 1989 Club Med Sales, Inc., 40 West 57th Street, New York, NY 10019

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Village	Water Temp. Summer/Winter	Underwater Visibility	Types of Dives	Depth of Dives	Sealife	Highlights
TURKOISE (Turks & Caicos)	80°-82°/ 76°-80°	50'-100'	reef/wall/canyons/ grouper holes	50'-120'	tropical fish, dolphins, turtles, gorgonians, coral...	Coral wall, night diving, **Dedicated Dive Center**
ST. LUCIA (West Indies)	82°/76°	50'-120'	reef/wall/wreck/ aircraft	30'-120'	tropical fish, dolphins, barracuda, basket sponges	The Pitons, night diving, **Dedicated Dive Center**
SONORA BAY (Mexico)	83°/65°	15'-75'	seamounts/rocky islands/canyons	20'-90'	seals, manta rays, sponges, anemones...	Seal Island, night diving, **Dedicated Dive Center**
MOOREA (Tahiti)	73°-82°	30-100'	reef/wall/pass	30'-80'	tropical fish, coral, colorful shells, reef shark...	Excursions to Tetiaora; **Dedicated Dive Center**
BUCCANEER'S CREEK (Martinique)	82°/76°	50'-120'	reef/wall/caves	20'-100'	tropical fish, coral...	Excursions to Diamond Rock
CANCUN (Mexico)	80°/76°	60'-80'	reef/grotto	12'-80'	tropical fish, dolphins, groupers, coral...	Excursions to Cozumel; excellent snorkeling
ELEUTHERA (Bahamas)	70°/65°-70°	50'-100'	at marina only	15'	tropical fish, coral, groupers, crustaceans	Program for beginners; lessons for children

In order to participate, all divers must certify that they are medically fit to scuba dive. Certain medical conditions will preclude members from diving; the Club Med Scuba doctor's decision shall be final.

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At **Moorea,** dive year-round into crystal-clear, warm waters teeming with spectacular tropical marine life from Napoleon fish to reef sharks to day-glo colored coral.

At **St. Lucia,** the majestic Pitons soar above as you explore a multitude of tropical fish including porpoises and barracuda. Explore the wrecks of ships and aircraft long ago swallowed by the sea.

At **Sonora Bay,** swim among playful sea lions in their natural habitat on our full-day excursion to Seal Island (weather permitting). Manta rays and tropical fish also await you in this yet unspoiled setting framed by colorful plants and anemones.

Our **Intensive Scuba Diving Programs** are designed with the certified diver in mind. To maximize comfort and enhance the dive experience, our program at these four villages includes:

- two one-tank dives a day, every day, from our boats
- tanks pre-loaded on specially designed, customized dive boats
- apres-dive snacks of fresh fruit, cheeses, chicken and ham
- a conveniently located dive shack for rinsing and storage of belongings and equipment
- diving with either a Club Med guide or with a friend, using the Buddy System, at our predesignated dive sites (Buddy System requires both divers to be certified)
- night diving once a week at Turkoise, Sonora Bay and St. Lucia
- free use of video equipment
- special parties and rendezvous
- a diver's meeting center in the village where seminars and video and slide presentations will be conducted by visiting experts

Courses of Instruction

We certainly did not forget all those who are new to the sport and are interested in mastering it. At Turkoise, St. Lucia, Sonora Bay and Moorea, courses earning Open Water Diver certification and Open Water Check-Out certification are available in every major system (PADI, NAUI, CMAS, etc.) to the serious novice for an additional fee. For the already certified, Club Med offers you the opportunity to continue your scuba education with our specialty courses, such as Advanced Open Water Diver, Night Diver, Deep Diver, and others, available for an additional fee.

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TRAVEL



Lahaina Divers/Hawaii

TEXT AND PHOTOGRAPHY BY ROD CANHAM

Maui is a Polynesian jewel ringed with white sand beaches, in a setting of clear blue water, against the backdrop of volcanic peaks. Everyone who visits Maui is attracted to the island's resort meccas, restaurants, shopping and watersports activities. Divers are introduced to a spectrum of tropical fish, encounters with unusual marine curiosities and frequent sightings of pelagics normally only dreamed about.

Maui's Lahaina Divers was established by Blain Roberts in 1978 to provide the diving public access to some of the most spectacular sites in Hawaii. Through a philosophy of customer service, with state of the art equipment and two of the fastest and most spacious dive boats in the state, it has grown into one of the leaders of the dive charter industry.

Maui was initially one huge land mass that gradually receded. As the sea reclaimed the low lying areas, four islands remained (Maui, Lanai, Molokai and Kahoolawe), separated by a shallow basin. The remnants of its cataclysmic birth offer a diverse blend of underwater volcanic topography that invites exploration and serves as habitat for Hawaii's unique and exciting







Top: A diver holds a Triton's trumpet shell. Above left: The endangered green sea turtle is featured on a Lahaina Divers T-shirt. Above right: Dolphins often escort dive boats. Below: The 50 foot *Endeavor* and 43 foot *Reliant* are two of the fastest large boats operating in Hawaiian waters. Both are set up for diver convenience.





Left: Lahaina Divers' facility at 710 Front Street in Lahaina, Maui. Established by Blain Roberts in 1978, and featuring state of the art equipment and high quality service, the operation has grown into one of the leaders in Hawaii's dive charter industry. Below: Kim Irving-Roberts and Blain Roberts.

marine life. Monochromatic reefs, ridges and pinnacles are festooned with a rainbow of tropical fish. Tubes, caves and caverns, the shells of receding lava flows, reward the curious with an infinite variety of invertebrates and a treasure trove of exotic crustaceans. Even the coral rubble that skirts most of the formations and the sand channels that border them are rife with unusual critters. Tepid blue water provides the medium for this adventure, often defying limitations of visibility, yielding frequent encounters with gentle, giant pelagics that rove the oceans in search of food.

The most sought after diving in Maui County is around **Lanai** and at a tiny remnant of a volcanic tuff cone known as **Molokini Crater**. Mid-channel between Maui and Kahoolawe, the crater is best known for its resident critters. Molokini rises from deeper than 350 feet, exposing a crescent shaped fraction of its total mass. The shallow basin on the inside of the crater is popular with snorkel charters and the focus of five different sites for scuba divers.

Reef's End introduces divers to a sand channel with a field of garden eels, numerous species of sub-sand dwelling shells and a runway for a few transiting manta rays. It is then a short swim over a rubble field to an arena of antler corals, slabs of lava and marine life action. Yellow margin and whitemouth moray eels are there for the feeding and sometimes petting. Tropicals abound in mid-water, but press close to the bottom when threatened, and whitetip reef sharks rest beneath the slabs, tolerating the glances and flashes from excited visitors.

Bordering Reef's End is **Garbonzo's Lair**, named for the domicile of Molokini's most renowned yellow margin moray eel. Next comes **Tako Flats**, grounds rich with octopus lairs in waters to 45 feet. **Enenue**'s main draw is the multitude of lemon butterflyfish that flock to the divers for handouts. It is also where I saw my first whale shark and had my first close encounter with a giant manta ray.

The other side of the exposed crater is not so frequently visited, but is a very special site. **Backside Molokini** plummets to 350 feet and requires good buoyancy control. Visibility often seems limitless and you never know what is going to swim by. Rays, schooling tuna and dolphins have checked us out, but last season two of Lahaina Divers' customers got to spend an entire dive with one-half dozen humpback whales that chose to share the encounter. There are no shallows in which to anchor, so divers drift with the current; the dive boat follows the bubbles and waits to pick up the divers when they surface.

The not so crowded island of Lanai offers eight miles of reefs and ridges that yield more than a dozen different dive sites. Many of the sites are named for the topographical formations that mark the spot, either above or below the surface, such as **Knob Hill**, **Wash Rock**, **Sharkfin** and **White Rock**. Others, such as **Memapache**, **Sergeant Major** and **Fish Rock** highlight some of the sites' residents. The most requested are the **Cathedrals**. Housed inside large pinnacles, light penetrates the many openings in the ceilings of these huge caverns. **First Cathedral** near Manele Bay is in 45 feet of water. The entrance opens to an altar-like table awash in light through the facing latticework of lava. Farther down the coastline, **Second Cathedral** has relatively shallow black coral, a friendly whitemouth eel named Elwood and large schools of *teape* or bluelined snapper. The highlights of both sites are the caverns' interiors and customers are encouraged to spend their time poking around the crevices and small holes with their lights.

Though Maui doesn't have the quality or the quantity of dive sites by comparison, the hottest spot is **Hyatt Reef**, a couple of miles north of the Lahaina roadsted. Fields of finger coral are interrupted by sand channels and huge antler corals and are home to several dozen green sea turtles. Normally skittish around divers, these turtles are so used to our presence they often seemed nonplussed by the intrusion. Because the green sea turtles are an endangered species, it is illegal to ride, handle or harrass them in any manner.

Lahaina Divers has a policy on all charters of marine conservation awareness. No hunting or collecting is allowed and safe, nonthreatening interaction is demonstrated by the guides and encouraged. To celebrate the tenth anniversary of the Endangered Marine Species Act and point out the sensitivity of the aquatic environment, Lahaina Divers commissioned Robert Engle, a California artist, to create a T-shirt portraying the grace and beauty of the turtle.

Customers check in for the regularly scheduled one-half day, two tank or full day, three tank charters at Lahaina Divers' retail operation at 710 Front Street in Lahaina. The shop recently went through a facelift to better accentuate its complete line of scuba and snorkeling equipment and accessories. It also offers a complete line of rentals including U/W photo gear, BCs, lights and optical masks. Underwater still photo and video services

(Continued on Page 164)



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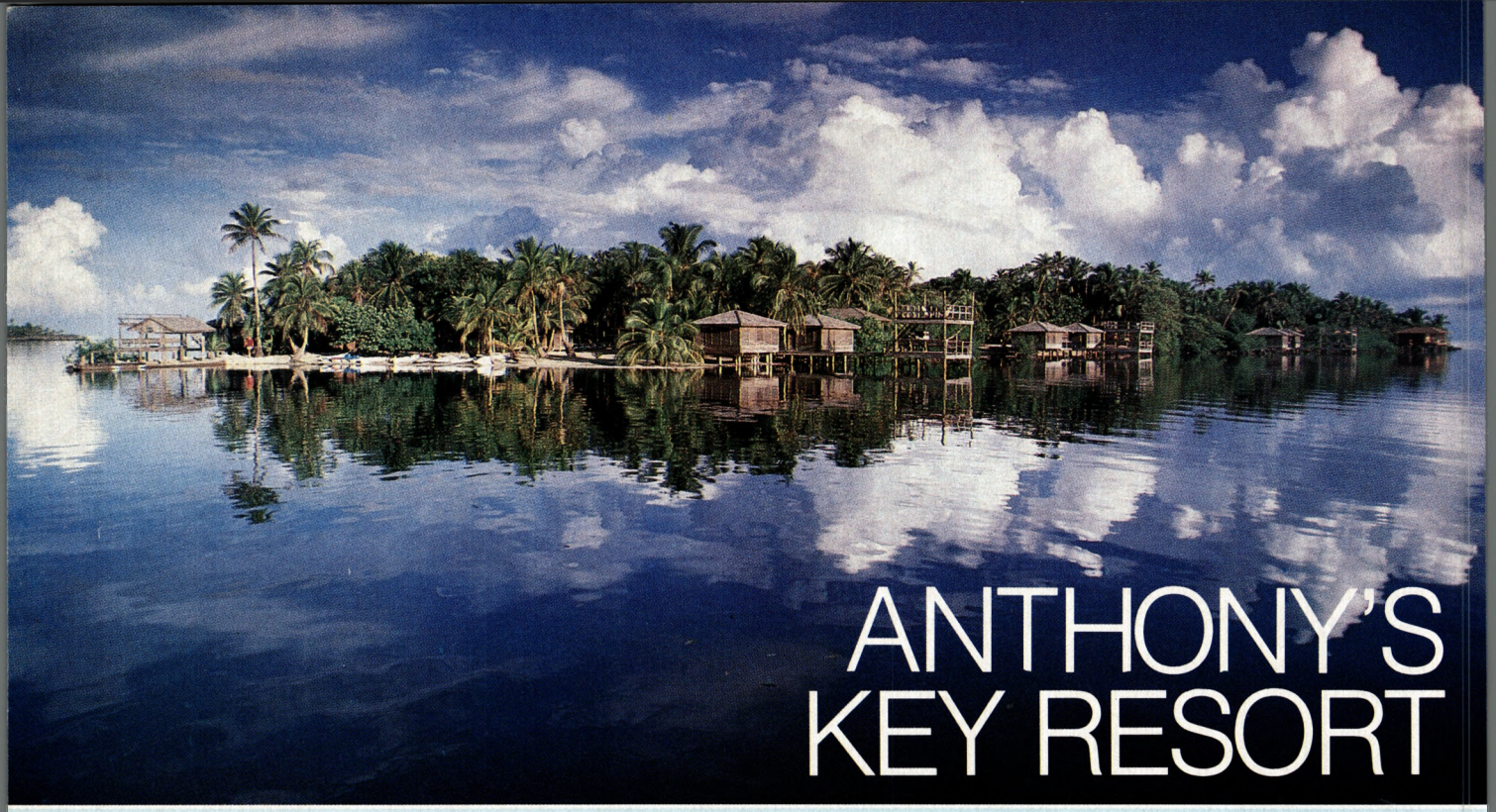
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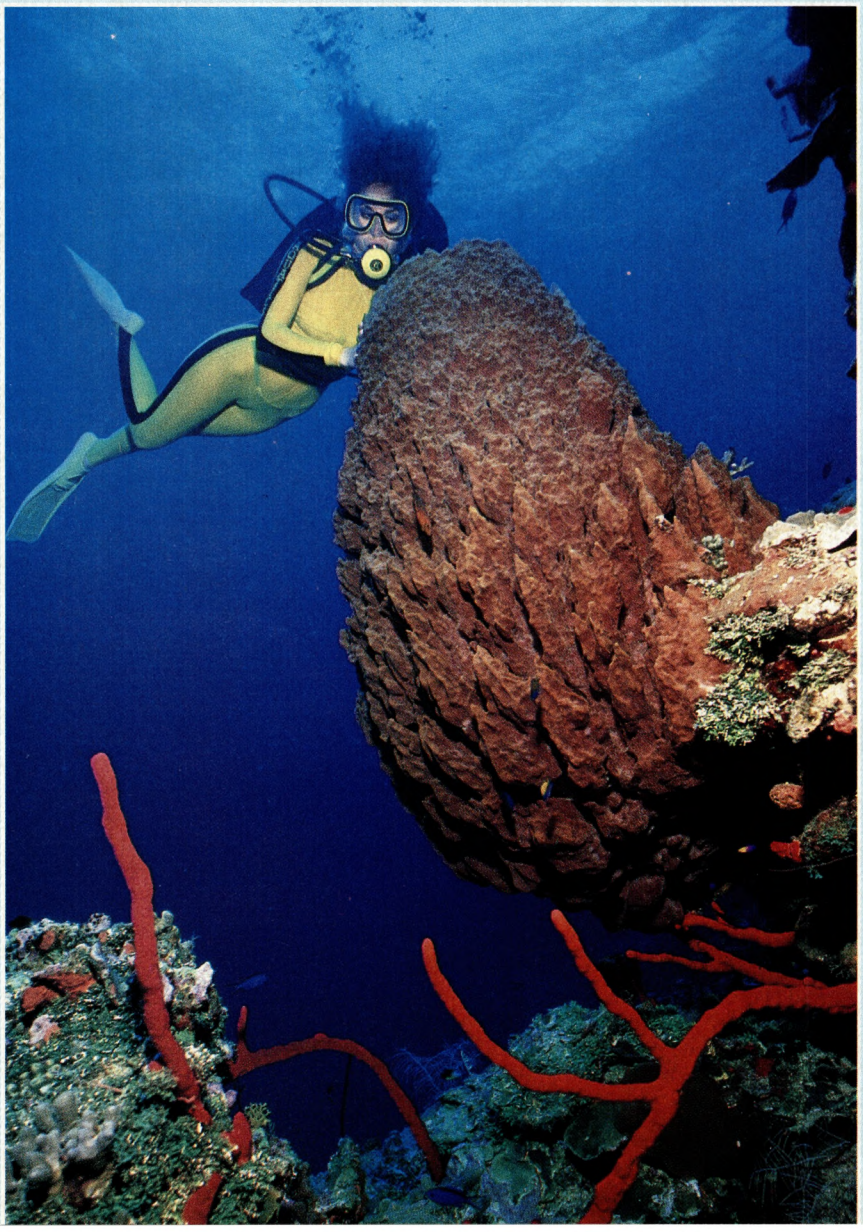
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ANTHONY'S KEY RESORT



Unspoiled Tropical Charm In The Bay Islands

TEXT AND PHOTOGRAPHY BY RICK FREHSEE

The first light of dawn rose above the palms of Roatan Island, bathing little Anthony's Key in a warm glow. It was the kind of day that divers live for: The sun was already high and there wasn't a breath of wind to disturb the waters in the placid lagoon. More like a dream than reality, Anthony's Key was suspended in the stillness, a perfect image of the golden islet and the tropical sky above appeared inverted beneath. Everything was repeated in the faithful reflection—clusters of palms, a stretch of white beach and groups of wooden bungalows stilt-mounted at the water's edge. Only the coming and going of the ferry boat picking up guests for breakfast rippled this image of pure tropicality.

Top: Anthony's Key and its mirror image. Left: A huge barrel sponge at Gibson Bight. Below: Fish photography at Halfmoon Bay.



Describing Anthony's Key Resort without using words like tropical and charming is nearly impossible. While many Caribbean resorts claim to be close to nature, AKR is immersed in it. The Bay Islands are a natural paradise: three small islands with associated islets and keys that hang like teardrops off the face of Honduras. Although geographically "off the beaten track" and culturally isolated from Central America, these islands exude considerable charm and appeal for true travelers, adventurers and divers. While nearly undeveloped and very uncommercial, the Bay Islands begin 1990 with an increased interest in tourism. Recently on Roatan, the largest and most populated of the Bay Islands, asphalt roads were completed between the airport and Anthony's Key. Telecommunications (fax and phone) were also completed. The big change came with the direct 727-737 jet service into the island (Tan Sahsa), replacing the island-hopper DC-3s. Roatan is now on the cusp of a tourism renaissance and with it comes the very popular and well positioned Anthony's Key Resort.

AKR's leadership views this new attention as a mixed blessing. While progress in tourism is welcome, the owners have decided against expansion and are planning new services and facilities to further focus on the privacy of visitors. The resort's sprawling plantation look will be preserved along with a staggered boat schedule and mid-sized boat design.

The physical presence of Anthony's Key is practically a trademark—natural wood bungalows wrap around a small eight acre island and continue up the hillside of Roatan. On the main island the cottages and buildings are linked by a series of wooden steps and walkways, including the pleasant indoor-outdoor restaurant, lounge and social centers. Secluded in island greenery, the flavor and mood is enhanced by the frequent appearance of hummingbirds, parrots and colorful "pet" macaws that roam the resort grounds at will.

At the resort and throughout the Bay Islands everyone speaks English, albeit in a sing song dialect. Roatan's native population draws from a diverse ancestry including English and Dutch pirates, African-Carib Indians, a considerable migration from the Cayman Islands in the mid-1800s and some mainland Hondurans, to name a few. Employees at Anthony's Key, including most of the boat captains and divemasters, are from small local villages such as Coxen Hole, West End and Sandy Bay, where the resort is located. The resort manager is Mandy Wagner, a North American who has lived on Roatan for nearly ten years.

Directly in front and "down the hill" from the mainhouse is the resort dock. Across from the dock is Anthony's Key and to the west, Bailey's Key, a scenic sand and coral islet capped with a grove of palms. At the dock, starting from the ferry boathouse, is a series of pleasant wooden buildings: the wet storage room with wash tubs and showers in front, the compressor room and dive shop. In front of the dive shop is a map of AKR dive sites and a boat/sign-up chart. Once you are registered at the dive shop, everything becomes self-contained and efficient. Dive gear does not need to be toted back to your room and your tank is automatically aboard your boat for each dive. AKR's helpful and friendly dive operations manager is Dennis Anderson.

Next to the dive shop is a gift shop and boutique where snacks, drinks, candy, etc. are also available. Next comes Photo Roatan, a full service photo and video facility managed by Ed Anderson. Ed is a local PADI instructor and photo pro who offers a variety of instructional programs in U/W still and video photography. Photo Roatan also offers daily E-6 slide film developing and camera and video rentals. At the end of the dock is a professional recompression chamber complex hosted by AKR and administered by Jack Thompson, a "good neighbor" and competent technician on missionary service in the Bay Islands.

The island-built boats continue the resort's tradition of naturalness without sacrificing speed, comfort or convenience. The schedule at Anthony's Key is left up to individual interpretation. There are themes to consider, such as picnic day at Tabiyana Beach, one of the most picturesque shorelines in the Bay Islands. There are rituals to participate in, such as the daily volleyball game between guests and "pests," and there are specialties, such as Photo Roatan, where you can take a photo course or schedule a personal video. Next to diving and photography, horseback riding is the most popular activity with an afternoon or sunset ride on a nearby beach. A variety of watersports and water vehicles is available for topside fun. The daily dive schedule is flexible and convenient: There are three single tank boat dives per day, usually beginning at 9:00 am; two night boat dives per week; and convenient shore diving day or night.

Anthony's Key enjoys an excellent location on the northwest coast of Roatan, close to some of the island's best diving and only 10 minutes from the south side airport. The island is 30 miles long but only a few miles wide and, as the resort is located toward the west end, it is possible to dive both sides of Roatan. This is a considerable blessing during the occasional winter norther. When this happens, AKR moves boats over to the south side

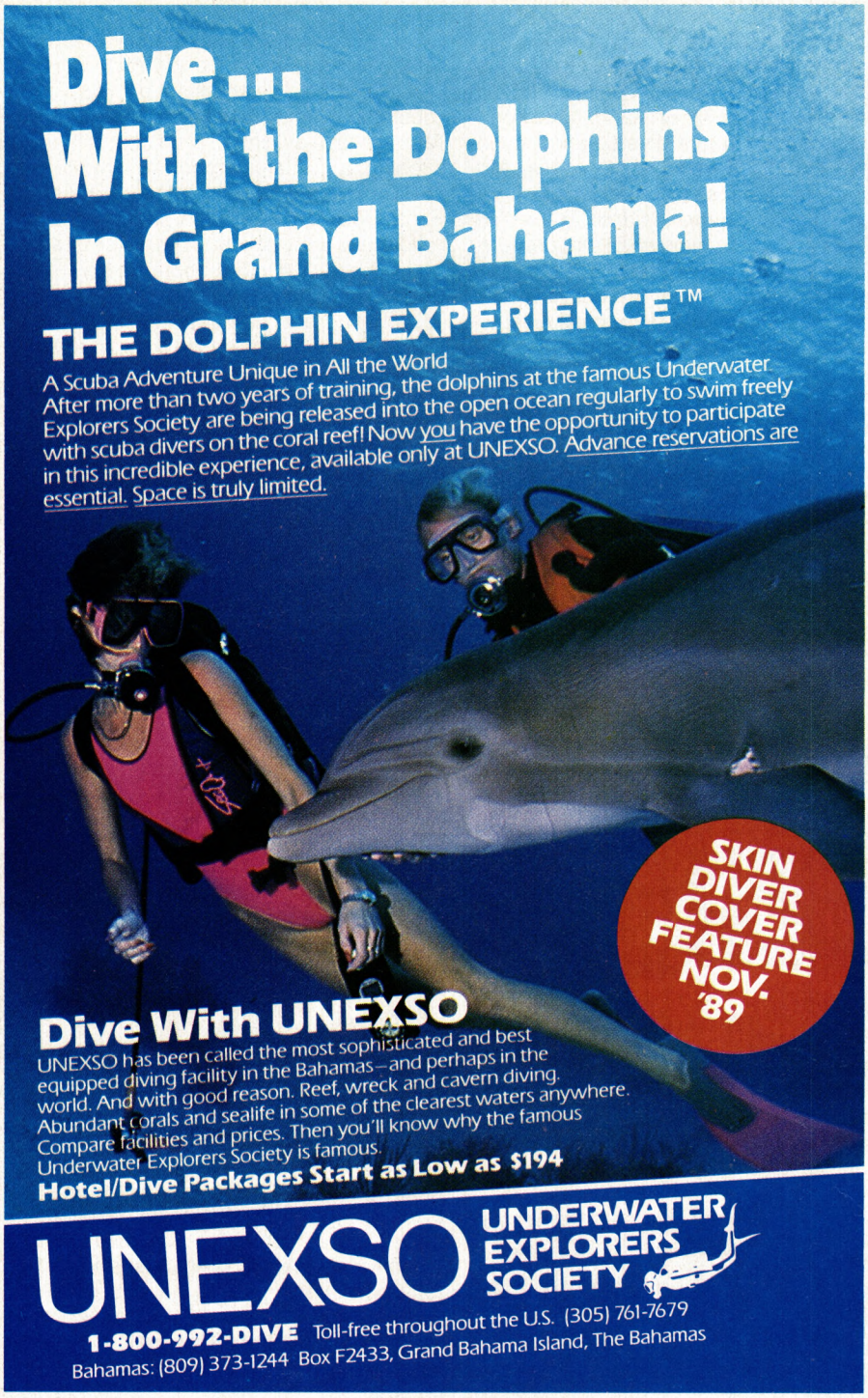
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Top left: Horseback riding at Tabiyana Beach. Top right: Guests enjoy the bar. Above: Tan Sahsa airlines flies to Roatan from Houston, New Orleans and Miami.



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and divers are bused over for boarding in Coxen Hole Village.

The biological diversity of Roatan's water world is impressive and unending. Virtually every known species of hard and soft coral and an incomparable display of sponge types is available at nearly every dive site. The most unusual and predominant display of stony coral is *Dendrogyra cylindria*—pillar coral. Normally found in the shallows, one formation close to Anthony's Key is more than 10 feet tall. Almost 30 miles of continuous reef borders both the north and south coast of Roatan. The wall or drop-off is found on both sides, usually a short distance from the reef front. Decorating the wall is a variety of sponges in rope, finger, barrel, vase and antler shapes, displaying bright and subtle hues throughout the color spectrum. Standouts are the symmetrical and asymmetrical forms of azure or iridescent vase sponges. Common reef fish include angelfish, rock hinds, parrotfish and indigo hamlets. Over the reef are constant parades of creole wrasse, blue and tan chromis and schools of blue tangs. Beneath ledges and overhangs are vivid royal grammas and deep hued blackcap basslets. Out in the blue eagle rays, hawksbill turtles and schools of jacks are frequently encountered.

Roatan's reef formations are recognizable and distinctive. The corals are formed in a nearly continuous series of physically exaggerated spurs or mounds separated by dramatic fissures and deep sand channels. The panorama presented by Roatan reefs is dominated by physical or geological processes rather than biological: The shallow reef platform is actually a huge and recently submerged land surface, exposed prior to the last ice age. The many narrow cuts that begin just seaward of the platform are old stream cuts, also formed during the last ice age 10 to 40,000 years ago. These ancient, now submerged, stream cuts are easily seen at a number of AKR dive sites including **Halfmoon Bay**, **Bear's Den** and **Gibson Bight**. Some are large enough to be called submerged river valleys and often result in dramatic inside walls more than 100 feet deep.

Many of the narrower fissures are overgrown with coral from above, creating meandering tunnels and caverns for divers to explore. Inside the caverns the walls are often decorated with tufts and rivulets of pillow lava, dramatic evidence of the volcanic formation of the Bay Islands. Although capped and surrounded by ancient reefs and some limestone the core of the islands is igneous (volcanic) rock and the chain is an extension of the Sierra de Omoa mountain range in northwestern Honduras.

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ANTHONY'S KEY

submerged ancient waterfall that, in the past, had water falling over the mouth into the cave. The piles and trails of round, flat river rocks out in front of the cave indicate sea level was at least 60 feet lower when these features were formed. These and other interesting geological facts on the formation of the reefs and islands have been presented by Dr. Thomas Bayer, professor of geology at Winona State University, Minnesota, who periodically offers a one week seminar at the resort. Other one week seminars hosted by Anthony's Key include special programs in astronomy, island culture and the official Nikon School of Underwater Photography, presented several times a year.

Roatan's spectacular scenery and quaint architecture (nearly every local dwelling is coastal and suspended on stilts) is perfect for sightseeing and photography. People you meet on the road, in addition to being English speaking, are spontaneous, expressive, good humored and knowledgeable. The lush, verdant hills of Roatan rise to 1,200 feet in the center of the island. The interior is dense jungle, overgrown with hardwoods and cohune palms. On top of the ridges are mounds where "yaba ding dings" are occasionally unearthed—ceramic bowls, vases, figurines and potsherds left by the aboriginal Indians 1,000 years ago. Near the coast the scenery changes to groves of coconut palms and lagoons, once visited by English warships and privateers. The occasional white sand beach appears between mangroves, seagrapes and ironshore outcrops.

Anthony's Key continues to offer something that is fast disappearing in much of the developed Caribbean—tropical reality and natural surroundings. It is not a place for shoppers and night creatures, nor is it likely to be any time soon. If you are looking to discover or recapture the spirit of adventure without giving up the comfort and support of a lovely resort, Anthony's Key is tempting.

And, getting there is easy—Tan Sahsa provides air service to Roatan from Houston, New Orleans and Miami.

For information contact Anthony's Key Resort, 1385 Coral Way, Suite 401, Miami, FL 33145; (800) 227-3483 or (305) 858-3483 (Florida).

BONAIRE RESCUE WORKSHOP

Last summer a special rescue workshop, sponsored by Andre and Gabrielle Nahr of Sand Dollar Beach Club, was conducted by Butch Hendrick and Dr. Karen VanHoesen of Lifeguard Systems. It was intended to test the skills and readiness of the instructors and divemasters of most dive operations on Bonaire.

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The program challenged the dive leaders in both physical and mental rescue techniques. Mock air embolisms, bends and drowning were a common occurrence. The retrieval of divers along the edge of the wall in front of the Sand Dollar was covered continuously throughout the course to the point where would-be victims were stripped of their equipment and mouth-to-mouth resuscitation was begun at the split second the surface interface was reached.



Proper use of oxygen and oxygen emergency field management were practiced continuously. CPR skills and field management were all part of this intense evaluation program. Dive instructors and divemasters from Sand Dollar, Flamingo Beach and Dive Inn all worked together to perfect their rescue techniques.

This was a specially designed program by Butch Hendrick of Lifeguard Systems for instructors and divemasters only. It was sponsored in part by the Bonaire government. Another program will be held this year. For more information contact Lifeguard Systems at (914) 331-3383 or Andre Nahr at Sand Dollar Dive and Photo (011) 599-7-5252.

HAWAIIAN WATERCOLORS RENAMED

Hawaiian Watercolors has changed its name to Ed Robinson's Diving Adventures. The Maui based company feels the use of the owner's name will better identify services and avoid confusion in marketing products.

Primarily a charter service offering dives to Molokini, South Maui, Kahoolawe and Lanai aboard two Boston Whalers, the company offers personalized, professionally run trips daily.

Robinson, a noted Hawaii photographer, has published several books along with being featured in many national and international publications. He will retain the name Hawaiian Watercolors for his photography and stock photo business.

For information contact Ed Robinson's Diving Adventures, P.O. Box 616, Kihei, Maui, Hawaii 96753; (800) 635-1273 or (808) 879-3584.

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INTRODUCING THE QUABBIN DAWG

GRAND CAYMAN'S MOST UNUSUAL DIVE BOAT

BY GERI MURPHY

Grand Cayman has a new dive boat and it is awesome! In fact, it looks like something designed by the Jolly Green Giant. Yet this remarkable craft rides the waves like an ocean liner and keeps you dry as a bone.

Designed specifically for diving the South Side and extended trips to the East End, the *Quabbin Dawg* is ideally suited for advanced dive trips. It adds a new dimension to Grand Cayman's already impressive menu of diving services.

BACKGROUND

The *Quabbin Dawg* is the brainchild of Arthle Evans, one of the island's expert dive operators. Arthle has been running Quabbin Dives for more than 12 years and it has become a popular choice for experienced divers who either live on Grand Cayman or visit it frequently. Last year, Arthle relocated his dive center from the original downtown Georgtown address to Coconut Harbour Dive Resort, a mile or so south of town.

With the relocation, the business continued to flourish and Arthle felt the need for a third boat that could greatly extend the range of his diving services. He started shopping for a hull that could meet these specialized requirements.



photos/Darvin Ebanks

Top: The 50 foot *Quabbin Dawg* is ideally suited for advanced dive trips. Above: Quabbin Dives is headquartered at Coconut Harbour Resort, south of Georgetown.

Since he is an imaginative fellow with two decades of experience in skippering boats (fishing and diving) on the high seas, Arthle developed an ingenious concept. He discovered a 50 foot cabin cruiser hull in Galveston, Texas and redesigned the entire superstructure and interior for this vessel.

DIVE BOAT DESIGN

Evans began with a hull that is especially unique. It was designed and built by a torpedo boat design engineer who wanted a really tough boat for himself. It is a one-of-kind prototype hull that is as tough as a tank. It looked like a mean old bulldog to Arthle, so he christened it the *Dawg*.

The boat is 50 feet long with an extra wide 18 foot beam. It has a deep V-hull that rides the waves smooth and easy. It has high sides, four to six feet above the

surface, which eliminate spray and wind.

Arthle stripped away the conventional superstructure and made the *Dawg* into an open boat with plenty of room for the passengers, tanks and gear. The decks are carpeted and there are two neat rows of seats with dive tanks mounted right behind the seats.

A cabin has been constructed beneath the bow deck, providing a private area for toilet facilities and a freshwater rinse shower. There is a 16 foot wide dive platform on the stern, complete with twin stainless steel dive ladders that allow easy exit from the water.

The *Dawg* is powered by twin 265 hp diesel engines that allow it a cruising speed of 16 knots. Carrying up to 24 divers, this awesome vessel can make it from one end of the island to the other in less than 1.5 hours. Any dive site off Grand Cayman is within easy reach.

DIVE TRIPS

With the advent of the *Dawg*, the Quabbin dive fleet has grown to three vessels—each one allocated to a specific geographical area of Grand Cayman. Two of the boats are moored in front of Coconut Harbour Resort, the third is berthed at Governor's Harbour, on the North Sound side of the island.

QUABBIN DIVE BOAT FLEET

Name	Type	Length	Beam	Cruising Speed	Diver Capacity	Dive Ladders	Showers	Heads	Dive Region
Quabbin Dawg	Day boat	50'	16'	14 knots	24	2	1	1	South Wall East End
Quabbin D-Too	Day boat	45'	14'	12 knots	24	1	No	No	North Sound North Wall
Quabbin Diver	Day boat	36'	14'	16 knots	16	1	No	No	West Wall North Wall
Gulfstream	Live-aboard and day boat	65'	19'	18 knots	16	2	3	3	Grand Cayman Little Cayman

Quabbin Dives now offers an expanded menu of dive trips that covers just about the entire island. *Quabbin Diver* offers regularly scheduled two tank dive trips to the vertical walls and reefs along the west side of the island. *Quabbin D-Too* operates out of Governor's Harbour and runs daily trips to the **North Wall** and Stingray City.

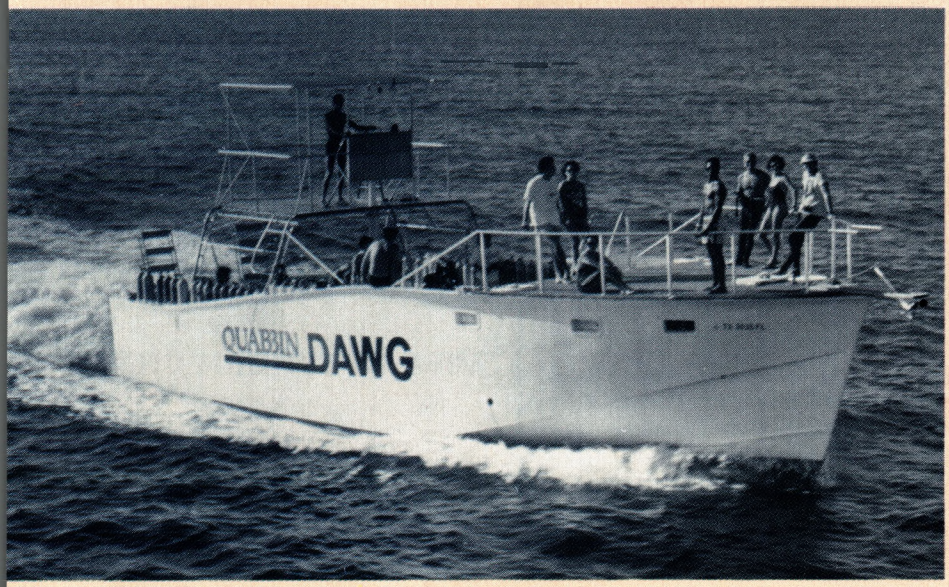
Quabbin Dawg will actually be used for two types of dive trips. The daily routine is a two tank dive trip to the vertical walls and coral gardens along the south side of the island. These trips include visits to popular sites such as **South Sound Point**, **The Pinnacle**, **Japanese Gardens** and **South Wall**.

One day per week the vessel will be used for Quabbin's special "*Dawg* Trip." This is a three tank dive trip to the **East End** of Grand Cayman, with lunch included. The dive boat will visit such legendary sites as **Three Pinnacles** and **Cinderella's Castle**. The third dive of the day will be a visit to **Stingray City.**

In addition to the three day dive boats, Quabbin Dives also operates the 65 foot live-aboard dive yacht, *Gulfstream*. This ultra-modern vessel offers scheduled two day and three day dive trips around Grand Cayman or over to Little Cayman's **Bloody Bay Wall**, weather permitting.



Above: The sign at Coconut Harbour. Below: The *Dawg* is 50 feet long and has an 18 foot beam. The decks are carpeted and tanks are mounted behind the seats.

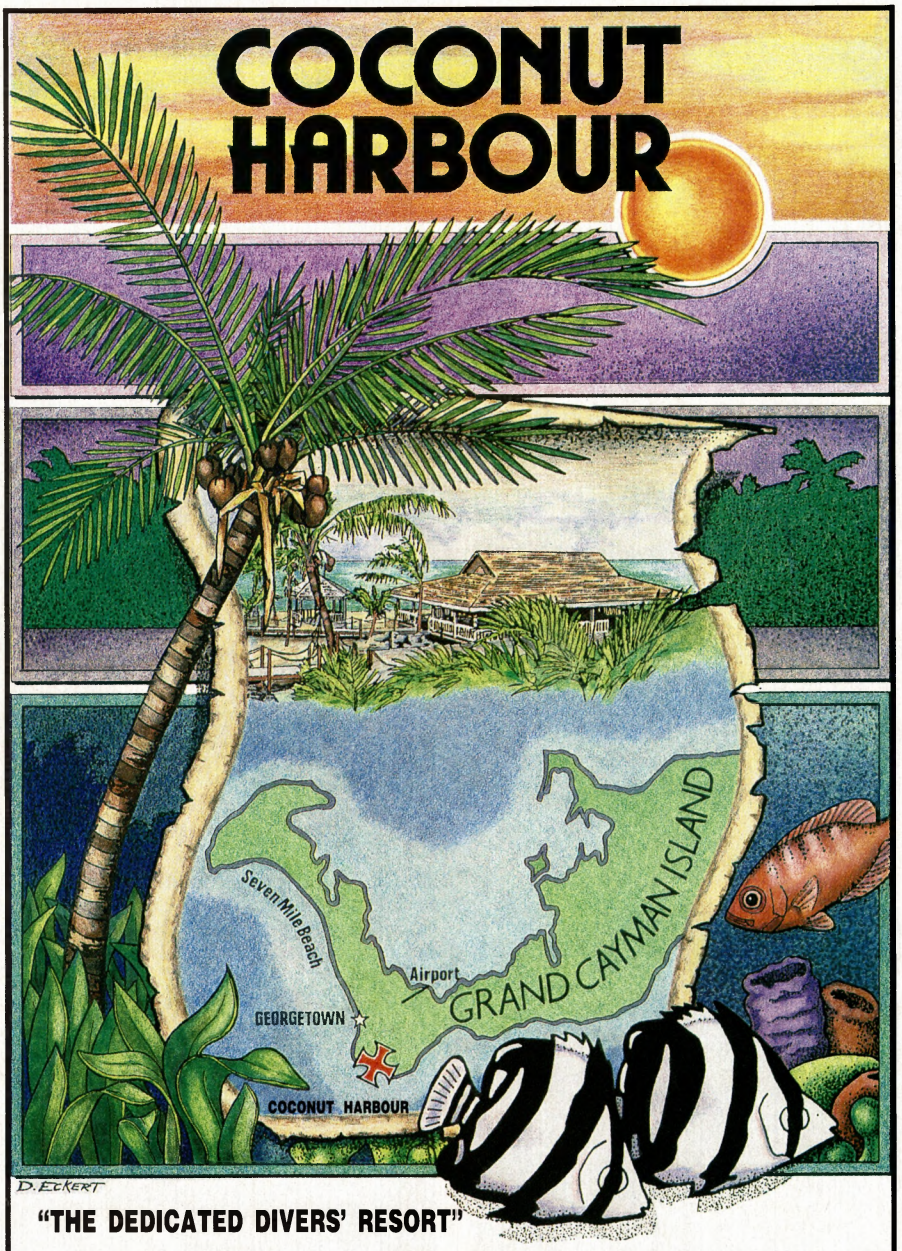




The *Dawg* was built by a torpedo boat design engineer and is as tough as a tank. It has a deep V-hull that rides the waves smoothly and high sides to keep passengers dry.

Getting to Grand Cayman is one of the easiest and most convenient trips you will ever make. The island is only 485 miles south of Miami (one hour and five minutes by air). Cayman Airways is the national airline for these Islands and has been carrying divers for more than 20 years. It operates nonstop 727 jet service from Miami to Grand Cayman at least twice daily—and three flights on some days. Cayman Airways also operates nonstop 727 jet flights several times weekly from Houston, Atlanta, New York and Tampa.

For more information and reservations aboard the *Dawg* or any of Quabbin's three other boats, contact Coconut Harbour Resort, 3574 Forest Edge Drive, Conyers, Georgia 30208 or call U.S. toll free (800) 552-6281 or (404) 483-2336.



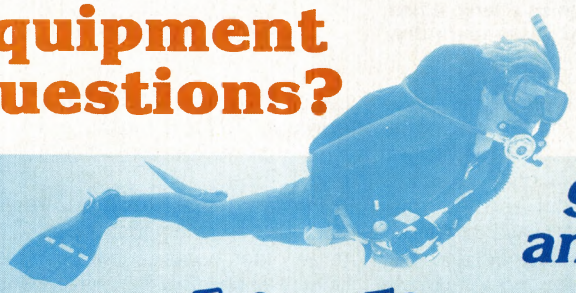
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NAUI CONTINUING EDUCATION

Beginning in 1990, NAUI instructors, divemasters, skin diving leaders and assistant instructors will be required every three years to accumulate two continuing education units (CEUs) in order to qualify for a teaching status membership. The first time this requirement will need to be met is in 1993. Continuing education units are awarded at the rate of 0.1 CEU per hour for completing a NAUI sponsored or approved leadership development seminar, workshop, course or conference. This means a NAUI member needs to complete 20 hours of self-improvement each three years. Plans are underway to provide home study programs for NAUI members in remote areas who would be required to travel great distances to participate in the leadership programs. NAUI members residing outside the United States will not be required to meet the 1993 CEU renewal requirement, but are being encouraged to do so.

The purpose of this new CEU program for diving leaders is to encourage them to keep current in emergency procedures, instructional techniques and the latest developments in diving. Similar requirements are common for other professions, such as medicine and dentistry.

NAUI certification courses and NAUI sanctioned programs are recognized by the Council on the Continuing Education Unit, of which NAUI is a member. For more information about CEUs for NAUI certification courses or for information about NAUI leadership ratings or renewal requirements, contact NAUI Headquarters, P.O. Box 14650, Montclair, CA 91763-1150.

MISS SOUTHERN CROSS

Little Cayman's Southern Cross Club, an exclusive resort catering to small groups of scuba divers and fishermen, has launched its new 28 foot Delta dive boat, *Miss Southern Cross*. Powered by an inboard Caterpillar diesel, *Miss Southern Cross* is outfitted with a forward standup cabin with head, a flying bridge, a dive platform, bench and tank racks serving as many as 12 divers.

The Southern Cross Club offers ten double occupancy beachfront cabins, but limits groups of divers to 12. About one-half the clientele are fishermen who find an abundance of bonefish, permit and tarpon as well as large billfish outside the reef. Southern Cross is equally attractive to snorkelers, birdwatchers and vacationers as a beautiful, relaxing setting for slowing down the world.

For further information contact Southern Cross Club, 1005 E. Merchants Plaza, Indianapolis, IN 46204; (317) 636-9501, fax (317) 636-9503.

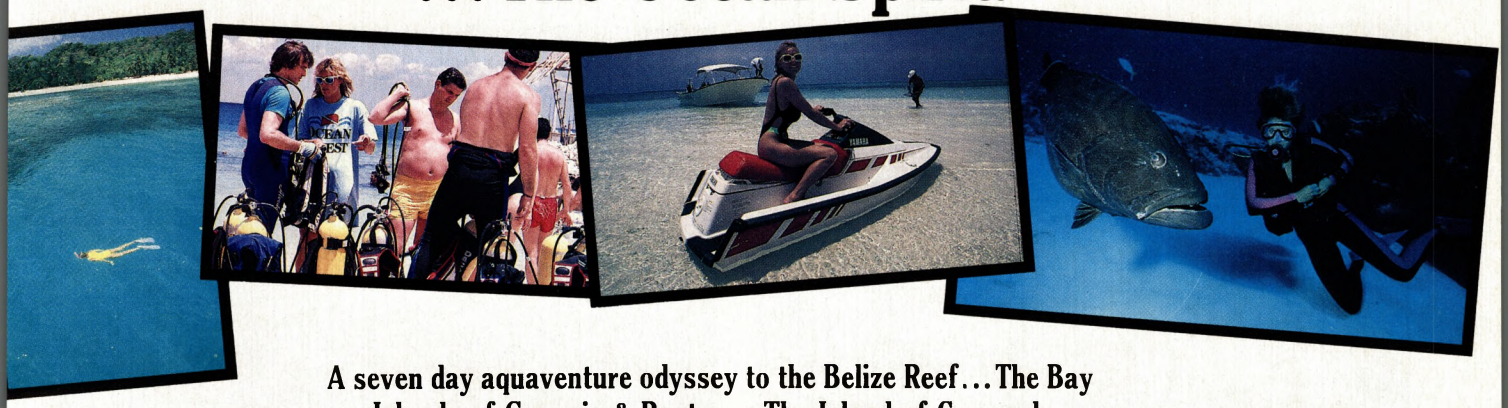
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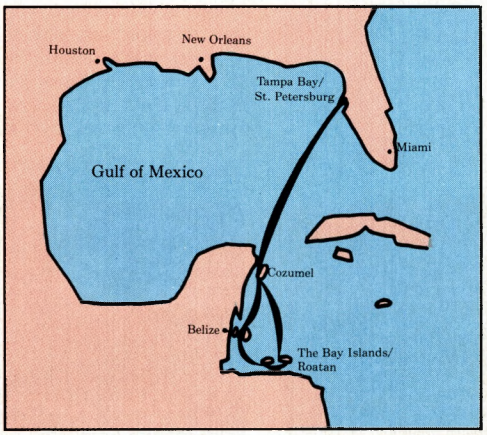


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DIVE BVI





Anegada is blessed with powdery beaches, waving palms and a lush interior rich with the fragrance of paradise. The island offers several excellent wreck dives. Top: Leverick Bay Resort. Above: Kendell Shewmake on the *Rocus*. Left: A diver and trumpetfish. Below: The *Sea Wasp*, *Sea Cat* and *Sea Horse*. Each of the boats carries two instructors and no more than 12 divers.



TEXT AND PHOTOGRAPHY BY GREG JOHNSTON





With the addition of Dive BVI's retail and charter facility, Anegada has become a diver's paradise. The company offers packages with several excellent resorts. Top: A guest room at Little Dix Bay Resort. Left: Kendell and Cindy Shewmake, managers of Dive BVI. Below: The Baths at Virgin Gorda.



From Leverick Bay I could barely see the low lying island on the horizon. It was identified solely by the cluster of clouds above it that reflected the green hues of the shallow lagoons below. It is easy to understand how mariners could overlook Anegada's treacherous reefs. For centuries this island has remained a mystery. Luring countless ships to their deaths, it was a favorite for wreckers and pirates and a navigational nightmare for unwary sailors.

Tucked away in a corner of the eastern Caribbean, Anegada is seemingly isolated and undeveloped. One of more than 50 isles that form the enchanting British Virgin Islands, it is atypical of the region. The only coral atoll in the Atlantic Ocean, Anegada is blessed with powdery beaches, waving palms and a lush interior rich with the fragrance of paradise.

Anegada, approximately 20 miles north of Virgin Gorda, is unique and contrasts with its sister islands. Just more than 11 miles long by 3 miles wide, it is composed almost entirely of limestone. Among its features is the infamous **Horseshoe Reef**, which extends southeast along the shore for more than ten miles. More than 300 known shipwrecks, some ancient, some modern, lie twisted here. Among the most famous is the ***Rocus***, also known as the "Bone Wreck."

The *Rocus* was a 300 foot Greek freighter that wrecked on the reefs of Anegada in the 1930s. The steel ship was enroute from St. Maarten to St. Croix with a cargo of animal bones, which were to be crushed into bone meal. It is believed that a New Year's Eve celebration caused the crew to mistake the mountains of Virgin Gorda for those of St. Croix. On that fateful night, the drunken crew changed the ship's course for the distant lights.

The wreck is a twisted mass of broken steel with most of the aft section intact in 40 feet of water. The large curve of the stern remains as a swim-through arch and an excellent photo prop. The large propeller has been removed and the wreck today serves as a home to flowing schools of reef fish, large groupers and a jewfish. The remains of the *Rocus* are spread over a small acreage of coral heads and forests of elkhorn coral. The boilers and engine sit prominently in the sand as do the winches and capstan.

Other excellent Anegada wrecks include the 240 foot steel freighter, ***Paramata***, which was wrecked during a hurricane. The ***Rosenbloom*** is an 18th century merchant ship that ran aground in the area of **Whitehorse Cays**. The remains of the wreck include planking and structural beams. The capstan is still mounted on the bow. The Whitehorse Cays are small coral islands formed by the deep Atlantic surge. Many unknown wrecks lie among them and it is not uncommon to find ship's ballast and cannons.

In addition to wreck diving, the Whitehorse Cays offer incredible reefs that can be circumnavigated and feature deep ledges and vertical drop-offs. In 40 foot depths, marine life such as turtles and large southern stingrays proliferate. At **Loblolly Bay**, there is an excellent beach dive. A coral tunnel leading to the outside reef can be entered by swimming out from shore. Large coral caves, some with huge cathedrals, punctuate the reefline. This is a fascinating dive on which to observe resting nurse sharks.

Until now, Anegada has been enjoyed only by anglers and yachtsmen. With the addition of Dive BVI's retail and charter facility, Anegada has become a diver's paradise. Dive BVI, owned by Joe Giacinto, is one of the British Virgin Islands' largest and most respected facilities.

The main dive center is at the harborfront Virgin Gorda Yacht Club. Managed

(Continued on Page 136)



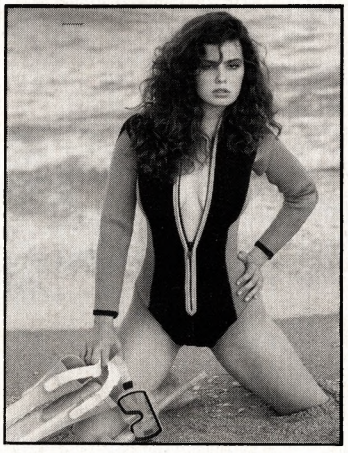
Ancient Spanish Galleon May Hold Millions In Treasure

A newly discovered Spanish galleon that archaeologists say may be one of the most significant discoveries ever of the colonial period, is scheduled to be recovered beginning in January and expected to take at least six months to complete. Seahawk Deep Ocean Technology, led to the site by world renowned marine archeologist Robert F. Marx, remotely photographed the site at a depth of 1,500 feet in international waters south-west of the Dry Tortuga Islands. A bronze bell (inset) was recovered from the site in late June which strengthens their admiralty claim to the site substantially. The entire "intact" shipwreck is in an area approximately 100' by 40'. Due to the depth and lack of encrustation, the artifacts appear to be in a high state of preservation. Complete mapping, excavation and recovery will be accomplished robotically using a state-of-the-art remotely operated vehicle known as "Merlin." Under the guidance of Marx, Seahawk has conducted additional surveys on several new potential sites off the East Coast of Florida in an area believed to be rich in colonial shipwrecks. Seahawk's expertise in high-tech deep water search, survey and recovery coupled with the vast historical knowledge of Robert Marx offers investors a rare opportunity to invest in a publicly owned corporation involved in the newly emerging industry of deep ocean technology, archeology and salvage. For Seahawk's video tape and more investment information contact:

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VIDEO NEWS

DAN VIDEO AND SLIDES

The Divers Alert Network (DAN) has created a four and a half minute audio/visual aid to help new divers learn about DAN's services and why it's important to join. Available either as a slide series with audio pulse activated cassette or in VHS tape format, the program shows people having fun learning to dive while explaining the benefits of individual membership.



The program is available free to anyone who joins as a DAN sponsor or sends five new members to DAN. It may also be purchased for $10. Please specify slide series or VHS tape. For information call (919) 684-2948 or write DAN at P.O. Box 3823, Duke University Medical Center, Durham, NC 27710.

SHERWOOD VIDEOS

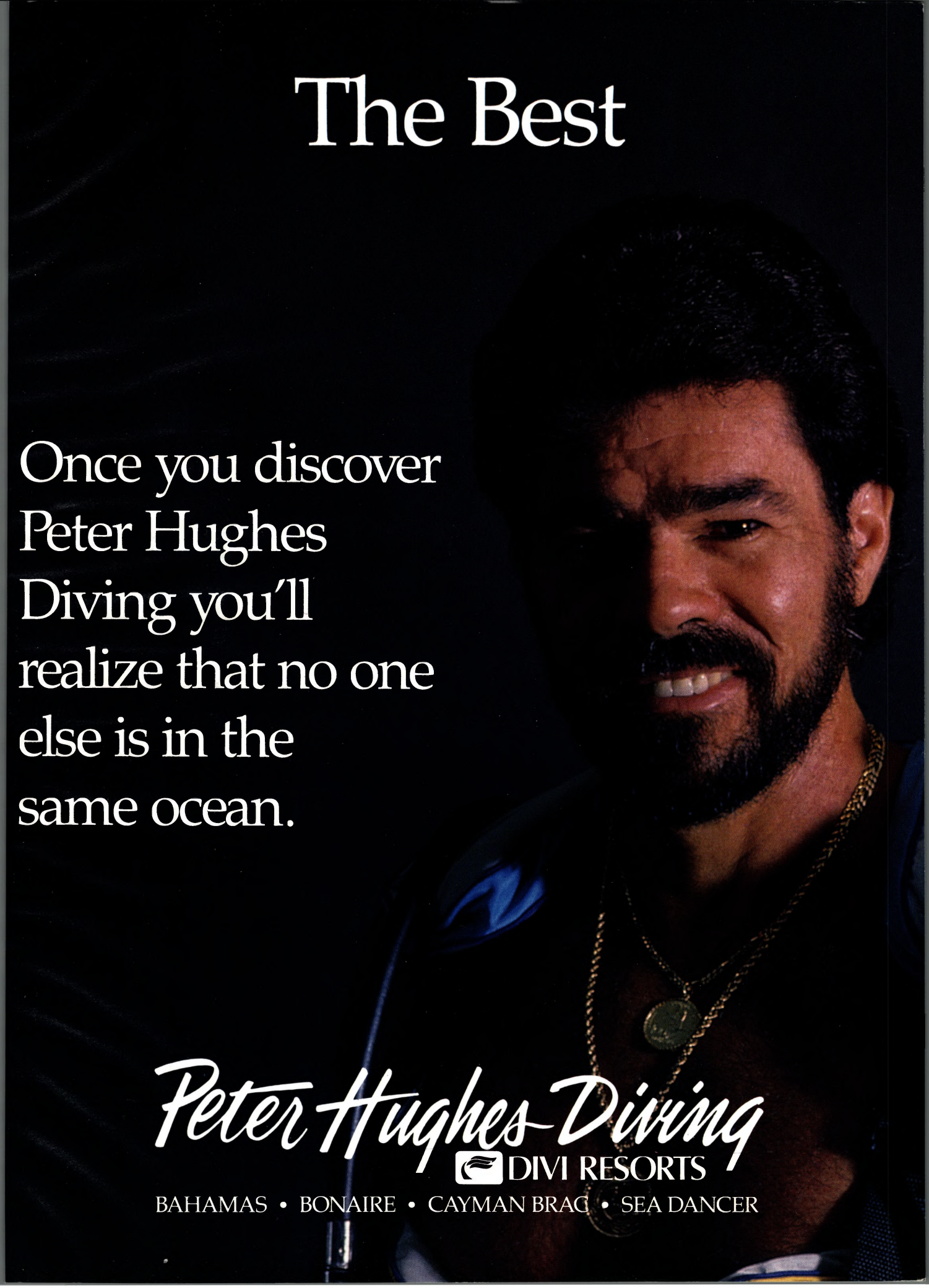
Sherwood Scuba now offers a videotape series to introduce sports enthusiasts to scuba diving and Sherwood Scuba products. The seven to ten minute videotapes are designed to be informative and entertaining.

Two videotapes—*Sherwood Regulators and Genesis Cylinders* and *Sherwood BCs and Rubber Products*—highlight Sherwood's attention to detail, commitment to quality and reputation as an innovator in the scuba industry. Both videos feature plenty of U/W action, with current scuba technology demonstrated.

For information contact Sherwood Video, P.O. Box 597, Lee, MA 01238.

FREE TRAVEL VIDEO BROCHURES

Neal Watson's Undersea Adventures now has exciting new VHS video brochures of its dive resorts on Andros, Bimini, Chub Cay and Nassau in the Bahamas. These tapes are available for viewing and duplicating at no charge if re-


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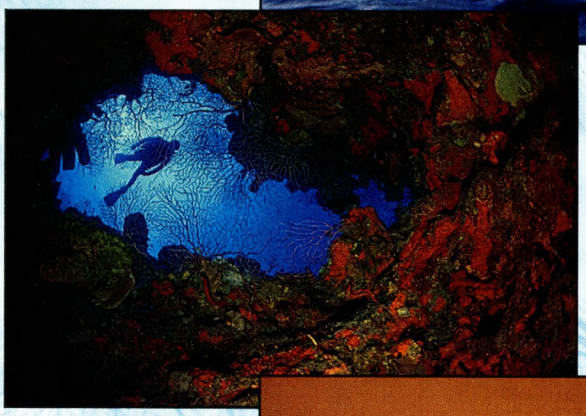
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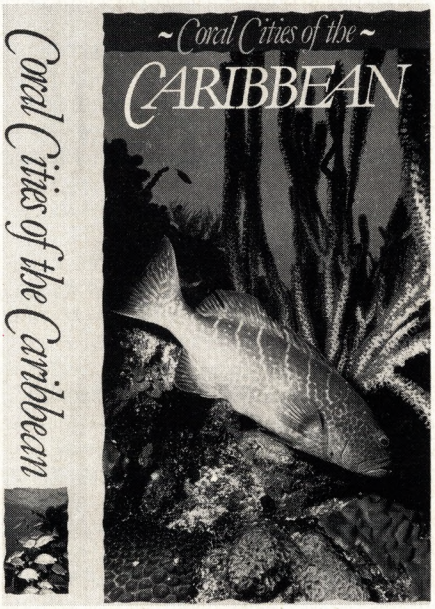
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turned within 30 days. For a "next best thing to being there" preview of the dive resorts, both topside and underwater, the tapes are unparalleled.

For information contact Neal Watson's Undersea Adventures, P.O. Box 21766, Ft. Lauderdale, FL 33335; (800) 327-8150.

REEF ECOSYSTEM VIDEO

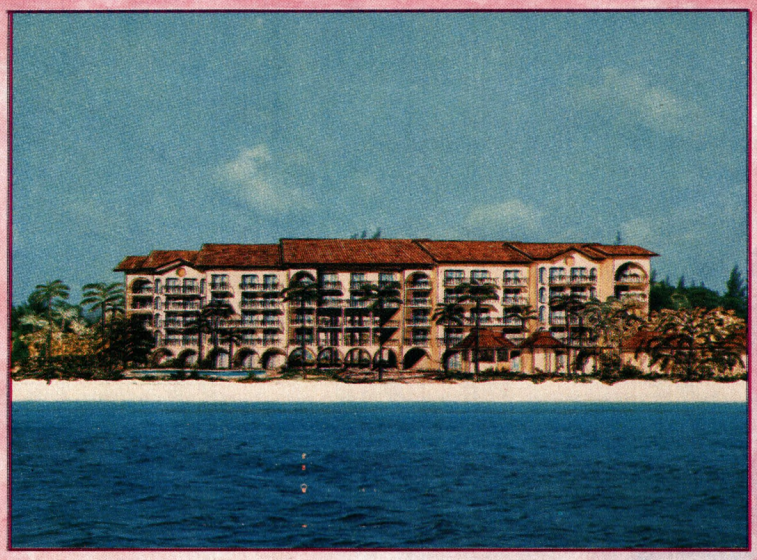
An educational videotape dealing with the Caribbean reef ecosystem, targeted specifically for sport divers and snorkelers, is now available. Entitled *Coral Cities of the Caribbean*, the tape is produced, written and directed by Nancy Sefton, a resident of the Cayman Islands.



Shot on Betacam, the colorful undersea journey begins at sunrise and ends on the night reef. Reef creatures are caught in the act of feeding, reproducing, using body camouflage, engaging in symbiotic behavior and defending themselves. The program closes with "The Diver's Song," original music and lyrics set against a kaleidoscope of underwater images. The tape is a Special Selection of Planet Ocean (the International Oceanographic Foundation) and carries an endorsement by photographer/educator Jim Church.

Nancy Sefton, who also hosts the program, is the author of five books and more than 100 articles on Caribbean marine life. Her photographs have appeared in Omni, SKIN DIVER, Oceans, Time-Life Books, Disney's Epcot Center, Natural History and more.

Coral Cities of the Caribbean retails for $29.95 and may be obtained from Video Presentations Inc., Suite 230, 2326 6th Ave., Seattle, WA 98121; (800) 458-5335.



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SKIN DIVER'S

TRAVEL TIPS

TEXT AND PHOTOGRAPHY BY GERI MURPHY

10 Ways To Stay Healthy On Your Trip

One of the key factors in having a successful, enjoyable dive trip is staying healthy during your travels. Good health allows you to enjoy the trip to its fullest and get the maximum amount of diving. On the other hand, a simple problem such as a head cold or stomach cramps can put a big dent in your diving routine.

Here are a few simple tips that will help you stay healthy and avoid some of the common pitfalls of overseas travel.

Get plenty of Sleep: Start your trip well rested. Get plenty of sleep three to five nights prior to departure. This will ensure your immune system is operating at peak performance. You will be less likely to catch a cold, suffer gastro-intestinal problems or feel the effects of jet lag.

Continue to get plenty of sleep *each night* of your trip. Turn in early and plan on a minimum of eight hours of sleep—more if you are fatigued from travel or diving. Being well rested helps to keep your immune system working properly and you will also be reducing the potential risk of bends.

Drink lots of water: Drink lots of water during your airline flight to avoid dehydration. The relative humidity in an airplane passenger cabin (at altitude) is in the five to ten percent range—the equivalent of a desert climate. This super dry environment can cause eye, mouth and throat irritation. Dehydration is also a serious contributing factor to the possibility of bends.

Plan on drinking an eight ounce glass of water for every hour you fly. Do not substitute beer or alcoholic drinks for this water. Alcohol actually works in reverse—causing you to void more liquid than you should.

Avoid drinking the local water: If you are traveling overseas, avoid drinking the local water unless you know for certain that it comes from a reliably pure source. Such sources would be a desalination plant, watermaker, water purifier, boiled water or bottled water imported from the U.S. Local water often contains *E. coli* bacteria that can cause severe gastro-intestinal problems—including acute stomach cramps, diarrhea and even vomiting. If you are not sure of the water, don't drink it, don't brush your teeth with it and don't eat fresh vegetables or fruits that have been washed with it. It only takes a couple of drops to ruin your vacation.

Alternative drinks include tea or coffee (the water is boiled), or canned or bottled beverages. Be sure to wipe the bottle or can top clean before drinking. Avoid putting ice cubes into your beverages—local ice is made from local water and freezing water does not kill the *E. coli*.

Bring plenty of sunscreen lotion: Since most dive trips are to tropical islands in the equatorial belt, sunburn is a serious hazard. The closer to the equator, the stronger the sun's rays. Bring lots of sunscreen lotion to protect those parts of your body that may be exposed.

Apply your first coat of sunscreen early in the morning, right after you brush your teeth. This early application will allow the lotion to be absorbed into your skin and act more effectively.

Apply a new coat of sunscreen immediately after your dive. Most sunscreen lotions are water soluble and thus wash away during the dive. If you are in an open boat, wear a hat and try to keep most of your body covered with clothing or a Lycra bodysuit. Don't be fooled by shady spots on a larger boat—the sun's rays reflect off the water or boat deck and still cause sunburn.

Never go barefoot: We all have romantic fantasies of kicking off our shoes and playing Huckleberry Fin. It is very tempting to stroll barefoot on the beach or explore an uninhabited tropical island. Yet this temptation can lead to a brutally painful foot injury. Since we wear shoes most of our lives, our feet are not conditioned for barefoot exploration. Always wear protective footwear, whether walking on land, crossing a beach or wading out to the dive boat. Beaches and tropical islands are veritable minefields of sharp stones, nails, chips of broken glass, wood splinters, sharp thorns, broken shells and so on. These hazards can cause punctures or cuts that result in painful infections. There is even the risk of tetanus from such a wound. You can also burn the soles of your feet by attempting to walk on sun baked asphalt or super heated sand.

If you plan to explore an island, wear a good pair of hard soled hiking shoes. If you are going beachcombing, wear sandals, tennis shoes or jogging shoes. If you are wading out to the dive boat, put on your dive boots (hard sole type) or a pair of old sneakers you don't mind getting wet.

Protect yourself from coral: Coral scratches are some of the most insidious injuries to beset a diver. They seem so innocent at the time they occur, yet often turn into painful, burning infections a day or two later. The combination of high humidity and tropical heat serve as incubators for such infections.

You can protect yourself from coral scratches by doing a few simple things. First, avoid contact with the coral reef whenever possible. Stay off the bottom by adjusting your buoyancy and be careful of where you are swimming. Second, wear some type of protective dive suit—a Lycra bodysuit, a thin wetsuit or the equivalent. Take special care to cover those areas most likely to be injured—hands, ankles, knees and elbows.

If you do suffer a coral cut, scratch or puncture seek immediate treatment. Dive guides usually have some sort of anti-infection medicine in their first aid kits.

Take care of cuts and scratches immediately: People who are active in outdoor sports often suffer minor cuts and scratches. These can come from a walk through heavy brush or an accidental slip on a boat. It is the kind of scrape that most people hardly notice and seldom bother to treat. Yet when you travel in a tropical climate, even a slight injury can turn into a serious infection.

No matter how small the scratch or scrape, treat the injury as soon as possible. Clean the area with soap and water, apply an antibiotic cream and cover with an adhesive bandage. Check the injury each night before going to bed and replace the old bandage. Preventing an infection is far easier than treating one.

Carry your own supply of patent medicines: When traveling overseas, you should carry your own supply of common patent medical supplies such as aspirin, adhesive bandages, antibiotic cream, Pepto-Bismol, decongestants and

TIPS LIST:
TEN WAYS TO STAY HEALTHY

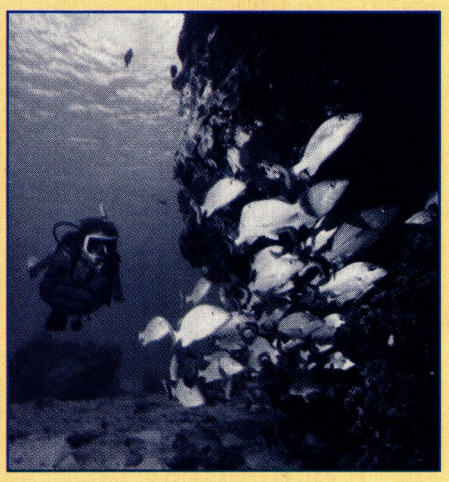
1. Get plenty of sleep.
2. Drink lots of water while flying.
3. Avoid drinking local water unless proven safe.
4. Bring plenty of sunscreen.
5. Never go barefoot.
6. Protect yourself from coral.
7. Take care of cuts and scratches immediately.
8. Carry your own supply of patent medicines.
9. Avoid insect bites.
10. Avoid eating raw fish.

so on. While these medicines are readily available at home, they may be difficult to find in a foreign country, especially when the label is in a different language.

Having these simple medicines available when you need them (usually in the middle of the night) can make your trip much more pleasurable.

Avoid insect bites: Tropical islands and insects tend to go together—this is a fact of life. Yet the abundance of insects is often seasonal, dependent upon the amount of rain, lack of wind and the breeding cycle of the particular insect in question. As a traveler you must be prepared to cope with such problems.

Traveling divers should take extra precautions to avoid insect bites whenever possible. The combination of saltwater immersion, tropical heat and high humidity can turn these little bites into festering sores. In certain parts of the diving world,



Good health allows you to enjoy your trip to the fullest and get maximum diving.

mosquito bites can lead to serious problems such as malaria or denge fever.

Always carry an ample supply of insect repellent such as Deet. While it may not smell very pleasant, such repellents can be effective if applied on all exposed areas of the body. Avoid going outdoors (especially at the beach) during the two hour period of sunset or sunrise. This is when many insects are the most active.

Avoid eating raw fish: While you may be a fan of the sushi bar in your home town, avoid eating raw fish during your overseas travels. The health regulations in the U.S. and Japan are quite strict on inspection of raw fish products, but this is not always the case in other countries or islands. Raw fish can contain parasites that invade your gastro-intestinal tract and cause serious problems. Make sure your fish, chicken and meat dishes are well cooked. High heat generally destroys most parasites or bacteria.

By following these simple recommendations, you can significantly improve your odds for a healthy and happy dive vacation.



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TEXT AND PHOTOGRAPHY
BY RICK FREHSEE

LA CEIBA HOTEL—

Cozumel is Mexico's largest island, nearly 30 miles long and 12 miles wide. It is also the country's most popular destination for divers. Nearly the entire length of its leeward western shore and around the southern tip is a continuous chain of prolific reefs harboring a stunning array of marine life normally bathed in crystal visibility. The quality of the dive environment is such an important and obvious attraction that diving tourism is the major activity on the island. Although considerable growth and expansion has and still is taking place on Cozumel, the island has still held onto its down home appeal. The little village of San Miguel is still quaint and charming, although restaurants and gift shops are its mainstay.

The resort ambiance here is Mexican Caribbean. It is typically tropical with powder white beaches and a deep blue sea, but it is also uniquely Mexican, specifically Maya Mexican, and with that comes a charm and hospitality that blends perfectly with its natural appeal.

Before tourists, the island was discovered by conquering Spaniards and be-

fore that it was a ceremonial center for the Maya. They called the land *Ah Cozumel Peten*, "the place of the swallows," and referred to it as the "sacred land of the green and blue."

Today there are more than 30 hotels and beach resorts on the island, but none more popular or attractive to divers than a traditional favorite, La Ceiba Beach Resort. I discovered this personal favorite in the 1970s and I have been coming back ever since. South of town, La Ceiba is perfectly positioned for extensive shore diving, easy boat boarding and is still very close to shopping and night life.

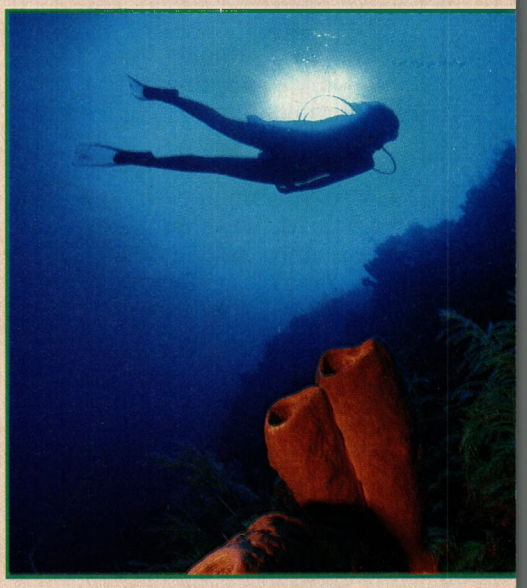
The 113 air-conditioned rooms at La Ceiba all have double beds, phones, U.S. cable TV, large tub and shower, a Servibar and a balcony view of the blue Caribbean. They are divided into an original wing (42 rooms, 3 floors) and a newer wing (71 rooms, 12 floors). There is also a pool, spa, sauna, exercise room, a private beach and tennis courts for guests to consider. Outside the hotel there is an array of tasteful gift shops and boutiques. The outdoor restaurant/lounge, La Chopa Loca, features an excellent Mexican influenced menu and specializes in chicken and steak fajitas. La Chopa Loca Restaurant is open for lunch and dinner. The Galleon Restaurant is indoors and is open for breakfast and dinner with a similar but somewhat different menu. Inside, the Lafitte Bar, with a nautical motif, usually attracts a good evening crowd. A trio of singers provides afternoon and evening entertainment. A new addition at La Ceiba is a fully equipped conference room seating 200 people.

Outside the hotel is a car and scooter rental service. Inside there is a travel desk where island tours, day trips to Maya ruins at Tulum or Chichen Itza, as well as fishing trips can be arranged. On the beach side is a variety of watersports, including windsurfing and rentals.

La Ceiba offers many privileges and







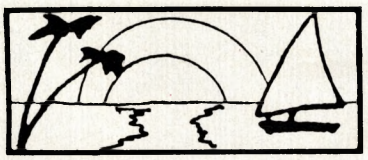
Opposite page: The beach behind La Ceiba; one of Del Mar Aquatics' boats; snorkeling over the Airplane Wreck. Above: La Ceiba beach and pool. Right: Orange tube sponges at Santa Rosa Reef. Below: Mexicana Airlines flies direct to Cozumel from many gateway cities in the United States.

DEL MAR AQUATICS

conveniences for visitors, including docks and storage facilities. It has a reputation for efficiency and economy. The resort is known to be pleasant, affordable and upscale. Perhaps the most important consideration for divers is the wonderful beach diving.

Directly off La Ceiba Beach is a shallow reef and **Airplane Wreck**, usually bathed in 100 foot visibility. The plane is a twin engine Convair 240 and by strict definition it is not a wreck at all. The plane was deliberately sunk in 1977 by director and famous diver, Ramon Bravo, as a backdrop for a Mexican disaster movie. After the production, Bravo was persuaded to leave the plane for divers and it has remained there ever since. Tropical storms, including Hurricane Gilbert, have battered the plane, turning it upside down and tearing it in half, but the main section of the fuselage is still intact. The aft section, the tail and one wing have been torn off and scattered nearby. The plane wreck has become a busy feeding station and an interesting night dive site. It is a

(Continued on next page)



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LA CEIBA/DEL MAR AQUATICS

haven for marine life and still makes an interesting wide angle photograph. The nearby patch reef completes a wonderful shore dive, day or night.

A short distance to the north is the **Del Mar Wreck**, a small but visually interesting assemblage of bare wooden ribs. During the day a swarm of sergeant majors gathers around the wreck. At night the wreckage is alive with octopus, crabs, morays, orange ball anemones and the splendid Cozumel toadfish.

Experienced divers will need boats and that is the province of Del Mar Aquatics. There is a dive shop and dock on the premises and Del Mar operates out of La Ceiba facility as well as its own shop and dock, just north of La Ceiba. For the convenience of guests, the hotel offers packages out of either concession.

Until recently the majority of Cozumel dive operations transported guests to the reefs aboard fishing and work boats. Riding the crest of the boat revolution is Del Mar Aquatics with its custom *Splash* boats. The four craft are mid-sized (33 feet) and offer a hull and design that delivers both space, convenience and a 30 knots plus cruising speed. These boats are covered and have a center tank console, ice box, cassette player, freshwater sink, first aid kit and oxygen aboard.

While the boats are a fitting symbol for Del Mar Aquatics, the entire operation is state of the art. Both La Ceiba and the Del Mar docks are excellent staging areas. The shops incorporate compressors, full rentals and wet storage in individual bins. Air systems and storage are modern and provide excellent support. This operation is one of the most complete on Cozumel, with nearly 30 employees, including many of the island's most popular and professional divemasters such as Martin Aguilar and Carlos Mena. Del Mar Aquatics is managed by Jose Antonio.

Freshwater showers are available at the beach dock and rinse tanks are found on every boat. Each *Splash* boat has a captain, deckhand and divemaster. Although there is space for more, a maximum of 16 divers is allowed. The crew normally switches tanks over for you between dives. There is a pre-dive briefing that covers reef topography and the specific dive plan. Morning and afternoon boat dives are offered each day as well as a variety of plans, including beach picnics, cookouts, etc. Although the trips to the reefs are quick, the dive services are not rushed or impersonal. Del Mar operates with an individually oriented and fun-loving attitude.

Most of Del Mar Aquatics boat dives off Cozumel are, by necessity, drift dives. They are well planned and relaxed. Experienced divers will find drifting along in the Yucatan current a safe and very pleasant experience.

Palancar Reef has become Cozumel's underwater signature and for good reason. This huge system is a breathtaking display of Grand Canyon sized underwater formations. Search far and wide throughout the Caribbean and you will not come up with a more visually stimulating experience. This famous reef complex is about a mile offshore and parallels the coast for nearly three miles. The reef is comprised of a nearly continuous series of gigantic coral columns fringing the edge of a sheer drop-off that plummets to infinity. The monstrous coral pinnacles, some 80 feet tall, are richly coated and festooned with sponges and fans. Deep grooves cut among the heads create caves, caverns and tunnels, also lined with bright sponges and huge fans. The second psychological thrill of a Palancar dive is the normally stunning visibility, often 200 feet or more.

Since Palancar is so large, it is possible to plan many dives here and I suggest you do. The most popular section is known as **The Horseshoe**, a series of high coral heads that rises out of a pure white bottom around a steep drop-off in a horseshoe shape. Drop between the grooves, out, off the wall and look back at tiny divers drifting by—like puppets on strings against a background of deep blue velvet. It's an awesome sight.

A great reef area for a shallow second dive is **Palancar Gardens**, where the drop-off starts as shallow as 30 feet. The coral heads and canyons here are in lower profile—kind of a miniature Palancar. The scenery is delicate and pretty, bright oranges and yellows bathed in soft light.

Perhaps my favorite Cozumel dive is **Santa Rosa Reef**, a short distance north of Palancar. It is a medium depth dive and, since it is slightly farther offshore, is normally bathed in a fairly strong current. Santa Rosa is a line of coral heads that form the edge of a nearly vertical wall that drops off to very deep water. The lip of the wall begins at 60 feet and the best diving is just over the edge at about 80 feet deep. This is one of the prettiest deep reefs off Cozumel. When I think of Santa Rosa, I see orange: Orange encrusting sponges and buff-yellow tube sponges dominate the wall. There are also lacy collections of rope sponges in red, red-orange and yellow. Many of the coral heads are hollow and you can swim carefully within. One trick of Cozumel diving, which is certainly useful at Santa Rosa, is to swim on the leeside of the coral head from the current. Once you are on the sand bottom behind a large coral head, the current blows over you and you can hide from the flow. When you are ready to move on, simply ascend and be picked up by the current again.

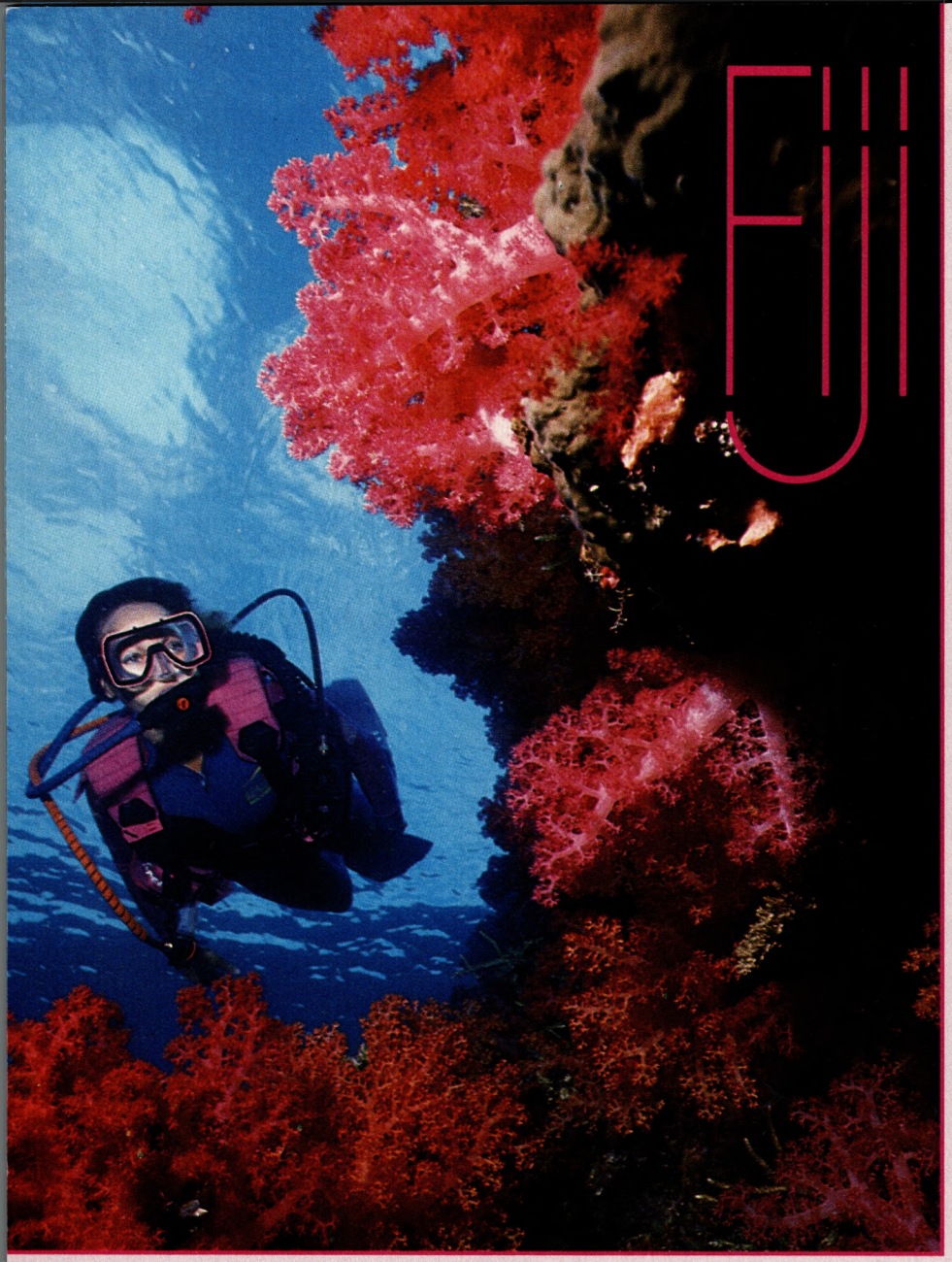
The major attraction at Santa Rosa for the past several years is the huge 80 to 100 pound black groupers that have

(Continued on Page 156)

SDM DIVE GUIDE TO FIJI



PHOTO BY BILL GLEASON



DISCOVER THE SOUTH PACIFIC'S MOST EXCITING NEW DIVE DESTINATION

Fiji offers soft coral fantasies, steep walls, interesting critters, reefs galore, exciting macro potential and world class underwater visibility. And, the dive resorts of Fiji cater to every level of diving need, from basic beginner to world class veteran.







TEXT AND PHOTOGRAPHY BY BILL GLEASON

The South Pacific diving scene has long been dominated by Hawaii and Australia, the number 1 and 2 destinations preferred by outbound divers. Micronesia is coming on strong, but the eventual winner may be a group of islands you've never heard of. They are the islands of Fiji and they represent some very special diving indeed. They can lay legitimate claim, with their live-aboards and the islands of the Northern Group, to some of the best diving in the world. And, that includes the Red Sea, the Coral Sea and other contenders for the nebulous title of "best." There are two very special reasons why Fiji may be the most popular diving destination in the South Pacific by the year 1995. These are: There is a style of diving and resort to suit every need.

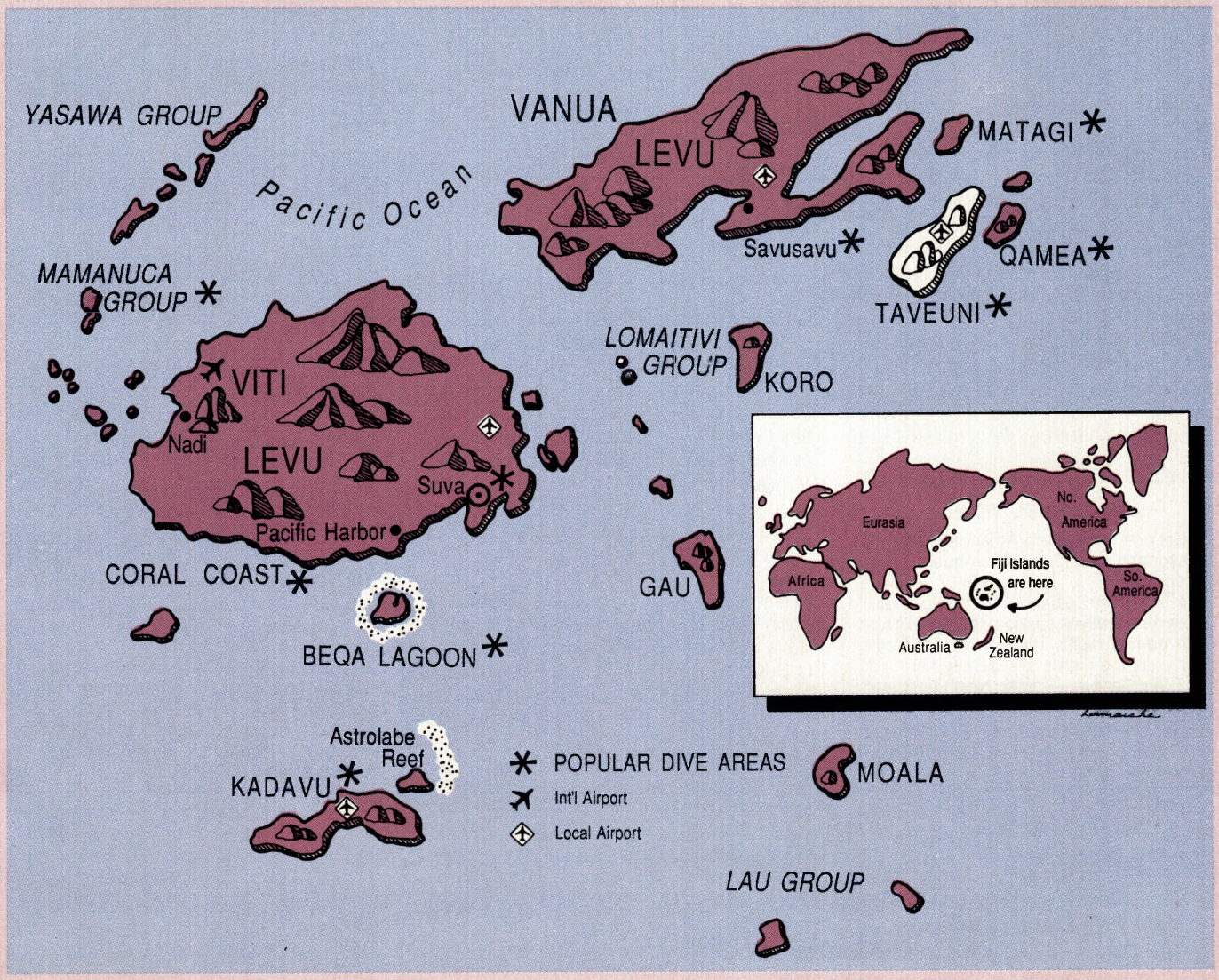
Fiji can also lay claim to being a magical travel experience. I am a jaded, if still somewhat optimistic, traveler. I have been called unprintable names by "friendly" natives. My luggage has been lost so many times it is routine. If there's a baby crying on a plane, it will be in the seat next to mine. It's no problem, it's all just part of the travel experience. And, every once in a rare while, I encounter a destination that makes every hassle, every cancelled flight, every delay, worthwhile. I have been to Fiji four times; I can't wait to go back. For me, that's magic.

I showed up an hour early for a flight from Savu-Savu to Taveuni. I had checked my bags and, since there were only three passengers flying that morning, I went outside, next to the grass runway that overlooks the sea. I realized I'd waited for airplanes in far worse places. A Fijian couple walked by and said hello, (actually, they said "*bula*," which is Fijian for hello) and asked if I was flying to Taveuni. I said yes, expecting they'd ask me to carry a parcel to a friend or relative. I would have been happy to oblige.

But, no favor was requested. The couple observed that I had nearly an hour to wait, but I said I didn't really mind. Well, they said, as long as you have an hour, why don't you come with us to the village (about two minutes away) because we're having a *meke*, or feast. My first, instinctive New York/Los Angeles response was no. But, I looked at two smiling faces, and said I would be delighted.

Fifty-eight minutes later, we all walked back to the plane and I said good-bye to my new friends. I had danced with at least 14 ladies (one of the options in Fijian dance is to put your arms around two ladies and dance with them both, which I thought was great), met at least 50 people, drunk *kava* with the village men and fallen in love with Fiji all over again.

The magic of Fiji is that this is not an isolated tale. The airport part was a little unusual but the friendliness and hospitality were not. If you visit any Fijian village it is the same. What is theirs is yours and this is magic. For most of my other world class diving, I have paid the price of arid atolls with little fresh water and even less to do, or rocking boats that have long passed the "lull you to sleep" stage. I had generally assumed hardship was just part of the game, the dues you paid for getting a shot at the best diving there is. But, as vivid as my memories of Beqa Lagoon, the Great White Wall or Rainbow Reef may be, they may fade with time. However, I will never forget the smiles of two Fijians, their kind offer to share a





feast with a stranger and the special kind of tropical paradise that places such a high value on a quality often abused in our sophisticated world, friendship. That's why I think, after the diving blows you away, you may return to Fiji again and again: It is a special place.

THE ISLANDS OF FIJI

You get two unique experiences when you travel to Fiji and you won't feel either one! First, you cross the equator and then you cross the international date line. Like I said, you don't feel anything, but it does create an aura about you recognizable only by fellow date line crossers.

You lose a day going to Fiji but you get it back when you return. Like the theory of relativity, I suspect there are only four or five people in the world today who understand the date line and I am not one of them. I have always been suspicious about actually getting a day back. But, since no one charges you for it, I am content to let it float.

Fiji is in the Southern Hemisphere, about 20 degrees south of the equator. Although the initial reaction is that it's far, far away, it's really not that far, particularly for West Coast divers. It's like traveling to Hawaii twice. You usually leave at night and arrive early the next morning. It's a little tedious, but not overwhelming. Any West Coaster who's dived Bonaire or other Caribbean island (which usually entails a red-eye flight out of L.A. or San Francisco) knows the feeling. You're a little trashed the first day, then you're fine. That's not too much to ask for the best diving in the world. Also, it's not terribly expensive. You can find a round trip air fare for under $1,000 if you shop and in days of escalating air fares that's not a bad deal.

AIR TRAVEL TO FIJI

Service from North America, although reasonably priced, is not frequent. Your options are:

1. Air New Zealand—out of Honolulu. With its excellent service, the "Kiwi" airline comes highly recommended. Book early, as the flights are usually full.
2. Air Canada—Pacific Northwest and even Northeast divers might try the Toronto/Vancouver connection to Fiji.
3. Qantas—operates a flight through Papeete, Tahiti.

You arrive at Nadi International Airport in Nadi, Fiji. Because of the Fijian pronunciation of towns and villages, you will be surprised to hear it called Nan'-dee. Remember to pronounce it with the N or no one will ever recognize your date line aura.

The airport is modern and customs and immigration are reasonably efficient and quick compared to most islands. Fiji is a pretty big place, with more than 700 islands, and arriving at Nadi may only be one step on your South Pacific odyssey (it may feel more like an ordeal than an odyssey at this point unless you sleep well on airplanes).

There are many choices for a visiting diver and the choices are as diverse as the number of islands is staggering. There are two main islands, Viti Levu and Vanua Levu. Nadi and Suva, Fiji's capital city, are on Viti Levu, and this island plays host to the Mamanucas, Coral Coast and Beqa. The chief port, Suva, is the base for two of Fiji's three live-aboards.

The other large island, often referred to as "the north," is Vanua Levu. Here you find the dive areas of Taveuni, Matagi and Qamea and the base of the third live-aboard, *Matagi Princess*. In addition, the island of Kadavu, south of Suva, is the site of Great Astrolabe Reef, a legend among live-aboard divers. Kadavu now has two small land based dive operations as well. You can reach Kadavu by plane or island freighter.

A BRIEF GUIDE TO FIJIAN WORDS

Although English is spoken universally in Fiji, many of the names of the places you visit are pronounced in traditional Fijian. Basically, the letter N is added after first syllable vowels; Q is almost never followed by U and is pronounced as a hard G. Thus:

Nadi is pronounced Nan̓-dee
Mamanucas is Ma-ma-new̓-thuhs
Beqa is pronounced Ben̓-ga
Qamea is Ga-may̓-a
Kadavu is Kan-dà-vu
Matagi is Ma-tang̓-ee
Taveuni is all vowels, Tah-vay-ò-nee

In terms of additional travel time, the Mamanucas are closest to Nadi, just a quick plane or boat transfer away. The Coral Coast resorts can be reached in a little more than an hour by car, Beqa Lagoon in a little more than two hours and Suva in three. You can also catch a plane to Suva from Nadi if you want to eliminate the drive. I find it's easier to drive, since the Suva airport is 45 minutes away from the live-aboards.

Reaching the north is fairly easy as well. Sunflower Airlines and Fiji Air operate a fleet of Twin-Otters, Islanders and Herons. These small, dependable aircraft have flown me to great diving all around the world and are at home landing on the grass runways of Savu-Savu and Taveuni. Both Sunflower and Fiji Air run pretty close to schedule and have never delivered my bags late. But, as is the universal code of traveling in small planes to exotic places, I usually carry a change of clothes (plus swimsuit, razor, toothbrush, etc.) along with a topside and U/W camera and strobe. Diving equipment is available at every resort, so even if a bag is lost for a day, a prepared diver just takes it in stride and enjoys his/her vacation.

I'll tell you about the diving in each area specifically and you can plan your own vacation. To really capture the magic of Fiji, I'd probably choose two resorts and extend my stay to 10-11 days. You can do Fiji in a week, but a longer stay will find you more relaxed at journey's end.

FIJI WATER TEMPERATURE

Fijian seasons are the reverse of those in the U.S., so Fiji's winter is June, July and August. The water gets as cool as 76 to 78°F then, so a shorty wetsuit is a must. If you're on a live-aboard, pack a full one-eighth inch suit as well.

Fiji's summer is during December, January and February. The water runs about 82°F, making Lycra bodysuits OK, with perhaps a reef vest or shorty for the second or third dive.

The population of Fiji is composed of two major ethnic groups, native Fijians and Indians. The Fijians are a product of traditional village life with its own social mores, ceremonies and feasts. Based on an ancient tribal system of agriculture and hunting, the village is the center of Fijian life. There's a chief and his role is to lead the village and settle disputes. You always ask the chief, or his delegate, for permission to visit the village and to take photographs. And, while basic family units are preserved, there is a communal feeling of caring for all people in the village (and visitors as well). Thus, no one is ever hungry, since food is offered to everyone. The modern villages range from traditional, thatch roofed dwellings to modern block construction, with just about everything in between. Since many Fijians work outside the village, evidence of VCRs and cars are also the signs of the modern age making inroads into traditional Fijian life.

The people of Fiji are among the friendliest I have ever met. You should visit a Fijian village and also feel free to get to know your dive guides and hotel staff members. They will be happy to instruct you in the ways of traditional Fijian village life. They will teach you to sing and dance and will share anything they have with

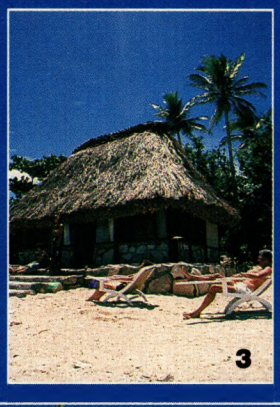
TIPPING IN FIJI

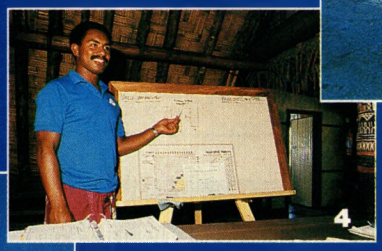
Tipping is not a custom in Fiji and you may offend a Fijian by offering a tip. Instead, say thank you in Fijian—*vinaka*. In cases of exceptional service, a small gift (dive guides love wild T-shirts) or gratuity may be offered. *Vinaka*!

10 REASONS TO DIVE THE MAMANUCAS


1


2


3


4


9


6


10


5

THE RESORTS OF THE MAMANUCAS:

Beachcomber
Castaways
Club Naitasi
Mana Island/Aqua Trek
Matamanoa
Musket Cove/La Violante
Navini
Plantation Island
Tavarua
Treasure Island


7


8

The Mamanucas are a group of idyllic islands situated just west of the international airport in Nadi, Fiji. A quick, efficient transfer is made by either boat or plane. The resorts of the Mamanucas, usually one or two to an island, offer an incredible variety of accommodations and vacation styles.

Here are ten reasons why we think you'll enjoy the Mamanucas:

1. Diving in the Mamanucas is superb. Walls, pelagics . . .
2. The Mamanucas, although quintessentially So. Pacific, are very close to the international airport in Nadi, Fiji.
3. The Mamanucas offers hotel accommodation to suit any diver's need . . .
4. Our instructors and dive masters are PADI and NAUI trained, and we guarantee they'll have you smiling after every dive . . .
5. If cruising's your taste, the Mamanucas has its own dive outfitted live-aboard schooner . . .
6. Game fishing, windsurfing, sailing and every type of watersport imaginable . . .
7. Our Mamanucas Islands are easy to get to, but each has its own style of resort, from quiet hide-aways to luxury retreats.
8. When you're not diving, just relax, an art form in the Mamanucas . . .
9. All of our rooms come with a view . . .
10. Diving in the Mamanucas is superb. Walls, pelagics, reefs, sea mounts, critters, soft corals, hard corals . . .

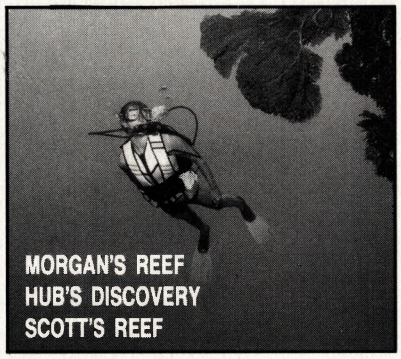
FOR MORE INFORMATION, CONTACT:
The Fiji Visitors Bureau 5777 West Century Blvd., Suite 220
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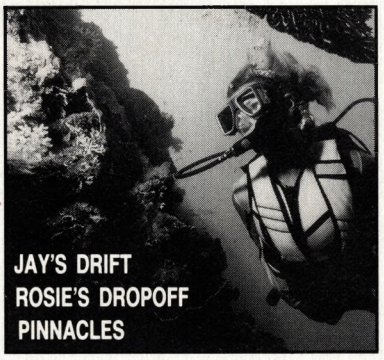
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FIJI

you. This is one of the most appealing aspects of Fiji and not to be missed. One group of Pennsylvania divers, on their first visit to a village in Taveuni, had tea with a charming lady (quite elderly) they called grandmother. On their return a year later, they brought photographs from the year before and a new teapot for granny. Just as these divers returned Fijian hospitality, so should we all.

A small gift of *kava* or a small token of appreciation should be offered to the chief according to proper protocol. Just check with your hosts at various dive resorts and you'll find them most happy to introduce you to proper customs. Women, for example, should not wear shorts when visiting a village. It is much more appropriate to wear a *sulu*, a wraparound skirt worn by many men in Fiji as well. They're comfortable, easy to tie and cause minor embarrassment when they

KAVA, THE DRINK OF FIJI

Kava is made from a root called *yongala*. Mixed with water in a traditional large wooden bowl, it is served with a particular tradition.

You greet all the people and wait until you're invited to sit down. Then you sit on the floor around the bowl.

The bowl master will offer you a small bowl of *kava*. Before you accept it, you clap once. Then, you slowly drink the entire bowl and hand it back.

Everyone, yourself included, then claps three times. Talk, sing and enjoy. Most North Americans find the taste of *kava* strange (to say the least). After drinking it you will feel a slight numbing sensation in your mouth.

Kava is not alcoholic. It is always served during talks with village people.

Grin and bear it: It's a small price to pay for a big part of paradise.

MEKES

A *meke* (pronounced meh-kay) is a Fijian style feast of food, song and dance. You will almost always be invited to one during your stay in Fiji and it's well worth going. The Fijians sing beautifully and will teach you how to dance Fiji style.

The resorts of Fiji often invite local villages to come to the resort to do a *meke* for the guests. While this is charming, you can sometimes find, or be invited to, a *meke* in a Fijian village. I have been to two and both were spectacularly moving.

Don't pass on any chance to attend a *meke*.

fall off. Practice your knots before venturing too far from your *bure*!

Bula: We've gotten you to Nadi so far and given you a glimpse of this magical place that is topside Fiji. You can wear a *sulu*, visit a village or two, go to a *meke* and have a bowl of *kava* just about anywhere in Fiji. How about diving? Read on—*vinaka*!

BULA!

Bula—boò-lah—is the universal Fijian greeting. It's a great word—saying it almost always makes you smile or laugh!

You will hear it frequently, always accompanied by a smile. You may simply answer *bula*, but, more correctly, *bula*, *vinaka* (vi-naȟ-kah) or "Hello, and thank you for saying hello." *Vinaka* is thank you, and I hope you use it frequently in Fiji.

Bula, *vinaka*!

THE MAMANUCAS GROUP

As you fly into Nadi airport, you will probably get your first aerial view of the Mamanucas Group in Fiji. Like dazzling emeralds against a setting of deep blue, these small islands are inside a massive barrier reef that rings most of the main island of Viti Levu. This area, on the western coast of Fiji, is known as the Malolo Barrier Reef. It protects the resorts of the Mamanucas from from the storms and winds that occasionally occur.

There's good news on that account for divers as well, since inside the barrier reef are tiny islands and pinnacles too numerous to count. Protected from ocean swells, the corals have proliferated, making this area one of Fiji's hard coral hot spots. The numerous passes, channels and mini-walls also form natural funnels that channel the water, creating opportunities for soft corals to flourish.

The resorts of the Mamanucas offer a quiet, relaxed escape from civilization. There is no pretense to big, leisure style resorts. Most of the resorts are on their own islands, ensuring privacy. And, while the resorts are not large, they are big enough to provide all guest services and amenities, with plenty of time left after diving to finish a good book or soak up some sun.

The diving comes in many flavors. The most dramatic is found at **The W**, a section of the barrier reef that juts out into the ocean not once, but twice, making the area resemble a W from the air or on a nautical chart. It is here, with deep water very close, that pelagics and rays are most commonly seen. Sharks are common, as they are in most parts of the South Pacific, creating an excitement that experienced divers love.

Inside the reef, look for passes and islands and you will find soft corals. **Magic Island** is aptly named and numerous seamounts exist as well. I'd recommend **The Barrel**, **Camel Humps** (a series of seamounts that's very fishy) and **Arc de Triumph**, a spectacular pinnacle. Since many of your divemasters are Australian or Australian trained Fijians, you will hear a lot about "bommies." That's Australian for coral heads. Pinnacles are seamounts to us. And, luckily, a wall is a wall in both English and Australian.



The Mamanucas are diveable all year long, as is nearly all of Fiji. January and February may see more wind and rain, but the other ten months are paradise.



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FIJI

At **Mana Island**, perhaps the largest resort in the Mamanucas, your accommodations are *bures* set on a stunning beach and reaching back from the sea under swaying palms. AQUA TREK, under the direction of Kevin and Helen Low, provides a full range of diving services.

Underwater visibility off Mana ranges from 80 to 140 feet and, like all the Mamanucas, Mana experiences the very best conditions from June to September.

Supermarket is a special dive at Aqua Trek/Mana Island; the schooling barracuda (about 200 of them) and other reef fish make the name appropriate.

Aqua Trek's boats and education programs are top notch and make it an excellent choice for intermediate level divers. Most of its sites do not have any current at all and handling current is what separates the intermediate diver from the experienced diver in Fiji.

PADI instructor Valu Tamanivalu (just call him Valu) runs a dive operation that caters to both Beachcomber Island and Treasure Island. These islands are just a stone's throw apart but the difference between the two is as clear as night and day, literally. BEACHCOMBER is a rock and roll, young folks style of place. It comes alive around 5:00 in the afternoon and rocks until well after midnight. There are budget, dormitory accommodations as well as private *bures*.

At TREASURE ISLAND, 30 secluded *bures* cater to a more up-market, quiet style of relaxation. You're on your own private South Pacific island and no one will bother you. The diving here is not as varied as in the Central and Southern Mamanucas, so I'd recommend it to folks who want to party at Beachcomber or relax at Treasure and still get a couple days of decent diving as well.

Another option, and another opportunity to dive with Valu, is to stay at NAVITI ISLAND, where each guest gets his/her own view of this tiny island paradise.

MAMANUCAS DIVERS is headquartered at MUSKET COVE RESORT. Musket is just a quick eight minute flight from Nadi, so getting there by boat or plane is easy. Musket Cove is a 24 *bure*, six villa property that embodies the Fijian style of gracious hospitality. The style is relaxed, but everything works and works well.

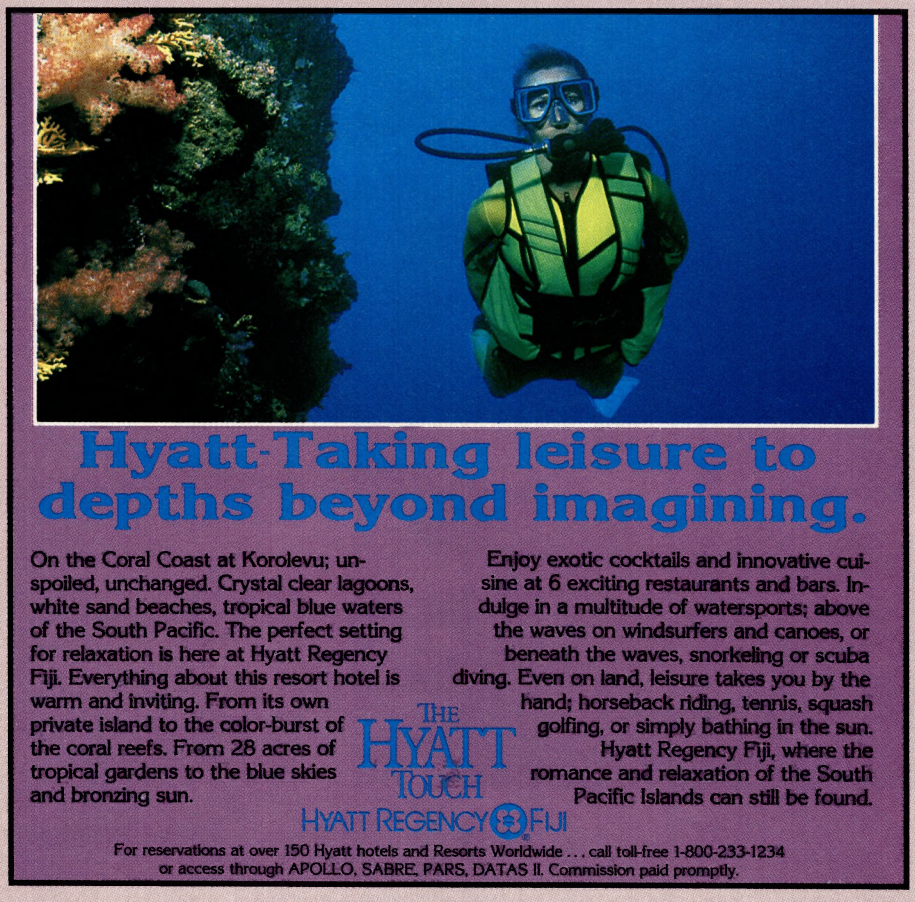
Mamanucas Divers is a fully qualified PADI facility and has two "longboat" style dive boats for quick excursions and the larger, twin engine *Robert E. Lee* for extended dive trips. With Mamanucas Divers I dived **The Pinnacle** and found it a photographer's delight. Rising from 90 to 25 feet, it resembles a cathedral spire. There's lots and lots of fish, soft corals and gorgonians. It offers excellent silhouette potential plus a tunnel at the bottom to boot.

Mamanucas Divers also caters to those staying at CASTAWAY, an idyllic resort that has earned an international reputation for guest service. Again, I'd stay at Musket if I wanted to dive every day, but if my vacation called for just a couple of days of diving, Castaway would be my choice.

And, if I wanted something really exotic, I'd charter the schooner *La Violante*, which also makes its home port at Musket Cove. This is an exquisite sailing vessel, built in 1922 but given a total refitting in 1984. Your captain is owner Don Ellison and your hostess, his wife Katherine. Cruising in luxury style is the name of the game here. I would hesitate to call this beautiful vessel a live-aboard, because it's not built for diving. This fine schooner was built to sail and the diving is an extra benefit. Nonetheless, they cater to six guests' every whim, and if it's four dives a day you want, that's what you get. Because of the range of the vessel, it cruises the **Northern Mamanucas** and the **Yasawa Islands**, which are virgin diving territory.

Sharing the island with Musket Cove is PLANTATION ISLAND RESORT. This is the perfect place to stay if you're packing kids with your luggage—until they're old enough to rock at Beachcomber on their own. Plantation supplies plenty of well rounded activities for folks of all ages. Your accommodations are *bure* style and the diving is handled very competently by master instructor Richard Hargrove. Richard has mapped all of the sites in the surrounding waters and tailors his dives to the experience level of his guests. He's extremely knowledgeable about the marine life in the Mamanucas.

As you can see, that quick plane trip of 10 minutes or so, or an hour or two boat ride, can set up an immediate opportunity to get in some great diving while you relax from your travel schedule. The Mamanucas are perfect for a full week's stay or for a three to four day tune-up on your way to discovering some of the other areas of Fiji.



FIJI TIME

If your watch does not appear to be functioning in Fiji, it could be suffering from "Fiji time," which refers to a common practice of not getting particularly upset about schedules and appointments. I generally found food service to be very timely and dive boat departures to fall into the same category.

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THE NADI AREA

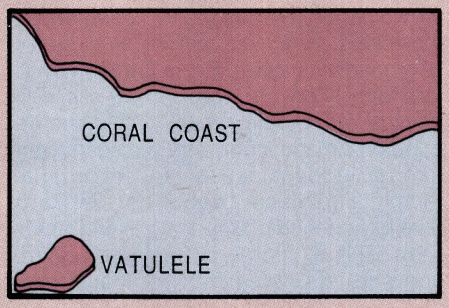
On the mainland of Viti Levu, very close to Nadi, are several large, world class, five star resorts. Catering to every wish, at considerable expense, is the REGENT OF FIJI. This hotel is top notch by any standard in the world. Colin and Suzan Snell of SOUTH SEA DIVERS run the dive operation at the Regent. Their custom designed, 28 foot dive boat is excellent and quickly cruises to all of the top dive sites in the Mamanucas.

THE CORAL COAST

From Nadi, a one hour car or coach transfer brings you into the main area of Fiji's tourism business, the Coral Coast. Stretching along Viti Levu's southwest coast, this is not a strip of high rise hotels, but an area of some 60 miles that encompasses a hotel every couple of miles along the way. There are hotels for the budget conscious as well as some camping facilities. At the other end of the spectrum, there are luxury hotels such as the Fijian and Hyatt Regency.

The Coral Coast has excellent restaurants, some decent shopping and, in general, all the amenities you expect to find in areas of well developed tourism. There is one big difference and it gets back to the charm of Fiji. No waitress in Hawaii has ever asked me my name, much less remembered it for three straight days. That's what happened at the Hyatt Regency. Somehow, the charm of the Fijians makes the Coral Coast both luxurious and exotic.

The Coral Coast is not for experienced, hardcore divers who want plenty of variety in a two to three dive per day setting for a week. It's a perfect place to begin or end a diving vacation in Fiji and it is probably the best place in Fiji to learn to dive or to grab a quick morning dive and get back to the wife and kids before mom discovers the dive gear's gone!



The Coral Coast's premier dive operation is SEA SPORTS, FIJI, run by one hard working, enterprising and amiable "mate" named Dennis Beckman. Having put together, over the last eight years, the largest and best trained staff of Fijian diving instructors and divemasters, Dennis runs base operations out of two different hotels, the Fijian and the Hyatt Regency (some 40 miles from each other).

The HYATT REGENCY, like Hyatts the world over, delivers a standard of service that's tough to beat. Again, loads of planned activities abound, each with a Fijian touch.

The FIJIAN is a traditional hotel, with a daily schedule of activities galore, *mekes* and regular trips to local villages. It is a discovery of Fiji in a comfortable, luxurious way and families would be hard pressed to complain.

All of the diving on the Coral Coast is done on the barrier reef, so you can expect some wall dives and some interesting marine life. At the Fijian, **Rosie's Drop-off** is a great example of sloping coral reef and **Jay's Drift** features schooling barracuda on a gentle, one-way drift dive. Experienced divers who like it deep should try **The Pinnacles**, three seamounts in about 120 feet.

At the Hyatt Regency, diving **Morgan's Refuge** is a must, because I feel it's the best wall dive on the Coral Coast. While it won't knock your diving socks off like the undeveloped north, I had no problem shooting two rolls of film per dive on giant red gorgonians, huge Napoleon wrasse (100 to 125 pounds), and some good patches of soft coral. **Hub's Discovery**, named after the group of diving doctors who found it, is special, and there's no

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FIJI

shortage of additional sites as well.

If you're interested in learning to dive or in doing your open water checkout, there is no better choice in Fiji than Sea Sports. It uses a 1:1 ratio of divemaster to student and a 1:4 ratio of dive guides to certified divers. The style is highly personalized and extremely safe.

In addition to the base operations at the Fijian and Hyatt, Sea Sports also operates a fleet of modern vans and vehicles to pick you up at a variety of other Coral Coast hotels, including CROW'S NEST, REEF HOTEL, TABAKULA BEACH RESORT, TAMBUA SANDS, HIDE-AWAY RESORT and the Naviti.

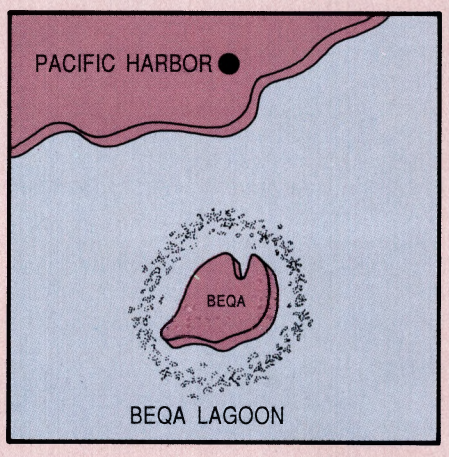
The attraction of the Coral Coast, besides the beauty of Fiji, is in the range of activities available, day and night. There are golf, tennis and just about every other sport, plus you get to try horseback riding to the waterfalls, an infamous coconut husking contest, a Fijian spear throwing contest, adult disco, children's disco, etc., etc., etc. Sea Sports is a professional operation that makes the Coral Coast a diving destination with plenty of other activities for the family as well.

BEQA LAGOON

Just southwest of the capital city of Suva lies a giant, extinct volcano. It is very difficult to see, since it's buried in some 5,000 feet of water. But, the very top of the volcano pokes its rugged head above the waves, creating a marvelous expanse of great diving called **Beqa Lagoon**. It offers explosions of soft coral walls with hues of red, purple, white, yellow and orange; dramatic cuts and passes; overhangs; ledges; caves; and drop-offs. Simply put, Beqa Lagoon is the class dive experience off the main island of Viti Levu. This is such a huge lagoon, there are more dive sites than you could ever dive in a month, much less a week.

After you land at Nadi, there are two ways to get to the PACIFIC HARBOUR HOTEL, the base of operations for BEQA DIVERS. A three hour drive is one (and the drive is pretty scenic) and a 25 minute flight that lands on an airstrip at the hotel is the other. It depends on connection time and money. Driving or taking a coach is less expensive and longer. Flying's faster, more expensive and may or may not be timed to your arrival in Nadi.

The Pacific Harbour Hotel is a full service resort, with some 110 rooms, a golf course, restaurants in the hotel and nearby as well, and a complete menu of recreation activities that includes fishing, hovercraft and other marine toys such as Jet Skis. Beqa Divers, right in the hotel's marina, is owned by Dave and Lorrayne Evans and features two big, solid, custom dive boats, *Fiji Diver* and *Beqa Diver*. Each day these boats make the one hour crossing to Beqa Lagoon and, depending on tide and current, select the best dive spots available. Dive instructor Kahren



Evans is often the divemaster, and she knows the waters of Beqa Lagoon as if she's been diving them all her life. (Which, incidentally, she has because she's Dave and Lorrayne's daughter.) Here's a sample of Beqa's best:

Side Streets is a coral maze of more than a dozen large "bommies" that are draped with soft corals. Because you can always find a little current on a particular side of the coral heads, you're just about guaranteed open, feeding soft corals.

At **Cutter Passage** it's possible to dive not only in a variety of sites in the lagoon, but in the passages leading to open ocean as well. These cuts in the top of the volcano and fringing reef have a wall that drops to 100, then to 5,000 feet. Pelagic barracuda, jacks, whitetip oceanic and silvertip sharks are routine.

Other than some of the diving legends of the Northern Group, **Soft Coral Grotto** is without compare for its soft corals. These are, after all, what we don't have in great numbers close to home in the Caribbean. Luckily, Beqa's got plenty to go around—red, white, orange or purple. And, don't forget to ask Kahren for photo subject tips. If you can describe it, she can probably find it.

These are just a few of the stars at Beqa Lagoon. If you're a serious diver,

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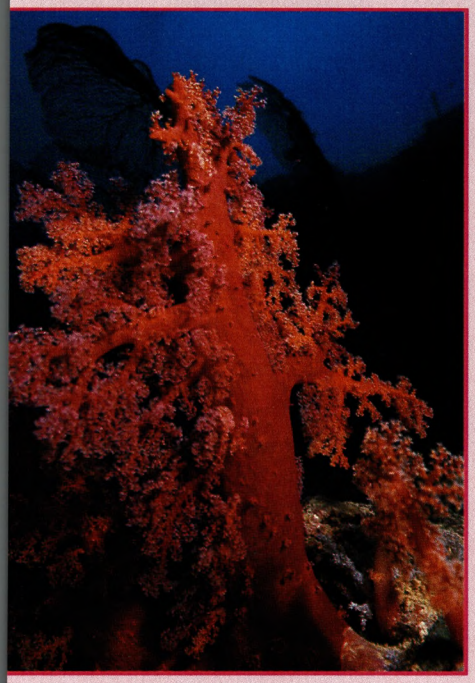
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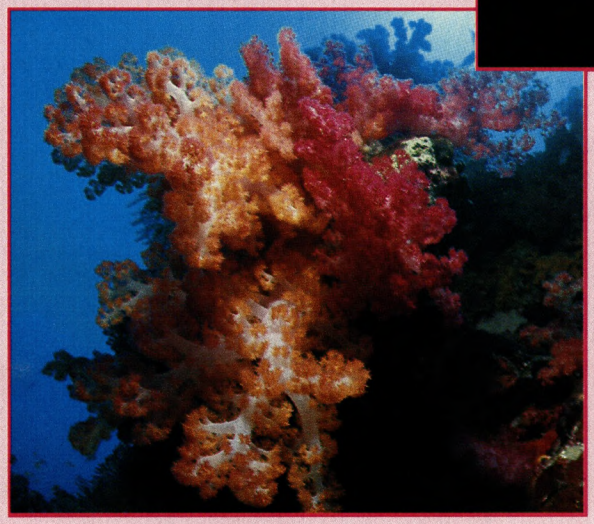
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Many of Fiji's resorts are *bure* style—you get your own private, modern cottage, usually hidden under palms or nestled on a pristine beach. Soft corals are a big turn on for divers but current dictates their size and shape. In still water you'll find them closed up, beginning to flower when the current picks up and out in full splendor as the current hits full speed. Dive guides know the times and spots to get it right.





Beqa is a must see. You will not encounter the sometimes difficult conditions you can get up north, but it's not guaranteed to be the current free waters of the Mamanucas. There's just no way around it: If you want to see these beautiful soft coral specimens in all their glory, you may have to speed up your kick. It's not a matter of serious consideration for reasonably experienced divers, but current is looked on as the price you pay for the best soft coral diving in the South Pacific.

At the time SDM went to press, construction was underway for the first resort to be built on Beqa, the main island of Beqa Lagoon. The MARLIN BAY RESORT is scheduled to open in mid-1990 and will be operated by George and Dorothy Taylor. A 10 *bure*, secluded dive retreat, it will provide divers with instant access to Beqa Lagoon.

Beqa Divers and the Pacific Harbour Hotel provide a combination of great diving with well rounded activities. You leave the dock at 9:00 am and return at 2:20-3:00 pm after burning up two tanks. Coffee, cold drinks, bread and cheese are served on *Beqa Diver* and *Fiji Diver* and you'll find yourself in good capable hands that know Beqa Lagoon

FIJI'S LIVE-ABOARDS

Scratch the surface of any world class diving destination and you'll always find a live-aboard. It's a testament to Fiji diving that it boasts three dedicated live-aboards, *Pacific Nomad*, *Matagi Princess* and the *Mollie Dean*. If you add the classic, six passenger schooner *La Violante*, in the Mamanucas, the tally goes to four.

Live-aboard divers are tough customers. They want the best diving, they want the best photos, they want good meals and they want all this 24 hours a day. A live-aboard can't survive without great diving and satisfied customers and both the *Pacific Nomad* and the *Mollie Dean* have been around long enough to earn their way in the live-aboard trade. *Matagi Princess* is the new arrival on the scene, but it will probably flourish as well.

Suva, Fiji's capital city, is also its largest port, so it makes good sense that *Pacific Nomad* and *Mollie Dean* make their home base there. It's the same transfer, Nadi to Suva, for both boats. *Pacific Nomad* is a large, impressive vessel of some 100 feet. With a beam of 22 feet, she's spacious enough so her nine double cabins are good sized and no one on the vessel has to bump into anyone they don't want to. *Pacific Nomad* has three heads, four showers and an outside after-dive shower as well. A typical diving day includes four to five dives and almost always a night dive. E-6 processing is available and the ship is run efficiently, with great care taken of the guests. As many as 10 staff members are on board to take care of your needs, and that's an unusually high number for a vessel that carries only 18 divers.

Pacific Nomad features both seven and ten day cruises and the length of cruise, weather conditions and passenger preference determine the itinerary. She almost always starts her diving at Beqa, giving new arrivals water time the very first day! After that, the hundreds of islands that dot Fiji's east coast are *Pacific*



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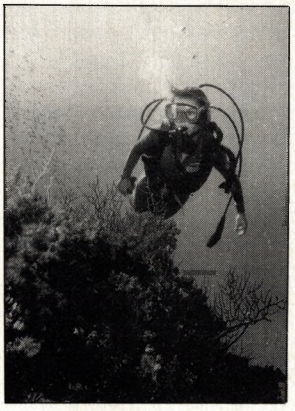
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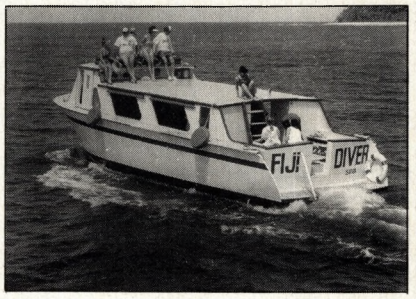
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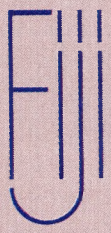
For more information on diving Beqa Lagoon or Pacific Harbour Hotel:

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Nomad's secret sites, yielding fabulous diving in infrequently explored areas.

The *Mollie Dean* caters to six divers and cruises much of the same areas as *Pacific Nomad*. It might be **Astrolabe Reef** one week, then the Northern Group the next. Captain Greg Lawlor makes sure his divers return home satisfied and the combination of *Pacific Nomad* and *Mollie Dean* gives visiting divers an option of a big live-aboard carrying 18 divers or a smaller vessel that takes just six.

Matagi Princess is based off the island of Matagi, in Fiji's Northern Group, and you must fly to Taveuni, on Vanua Levu, to get there. The *Princess* is a four cabin, eight passenger, 75 footer that has just been completely rebuilt. She cruises the Northern Group and is constantly searching for new dive sites. And, that's saying a mouthful. The dive sites we know about in the north are awesome to say the least. But, with the additional range of *Matagi Princess*, even newer areas such as **Forbes' Island** will be within easy access. That will make for superb diving.

The *Princess* has been completely rebuilt using state of the art live-aboard design and will provide a welcome option to divers who have wanted to dive the north on a live-aboard. *Pacific Nomad* does not range that far, but *Mollie Dean* does occasionally. In any case, the customers give each of these vessels high marks on diving, food, service and seamanship.

Lest you think you might miss some of the fun in Fiji by being on a ship, most of the live-aboards visit local villages in the islands as well. You're invited to join the captain or mate as they go ashore to say hello to the villagers and this will provide enough time with the Fijians to drink a bowl of *kava* and experience their friendliness and hospitality.

KADAVU

Far off even the occasionally beaten track is the island of Kadavu. Right next to world famous Astrolabe Reef, this area is not developed for tourism, yet has a few dive operations and small hotels. Most of the visitors are "backpackers"—young Aussies, Kiwis and Europeans who are traveling the world on half a shoe string. But, the diving on Astrolabe is epic, so Kadavu could figure into Fiji's diving future in a big way.

Kadavu is Fiji's fourth largest island, some 40 miles south of Viti Levu. Both Sunflower and Fiji Air fly there from Suva and Nadi or you may take the weekly boat, which sails from Suva. The boat costs $20 Fiji but it may be a very slow trip depending on how many villages it calls on along the way.

DIVE KADAVU/MATANA RESORT is an SSI facility with two 25 foot dive boats and three *bures*. Two *bures* sleep five people each, dormitory style; the third features four double bedrooms and a central lounge.

ASTROLABE DIVERS and KENIA RESORT also run a small operation that can accommodate up to 10 divers. The prime areas of diving access are the northern sections of Astrolabe Reef.

Kadavu is adventurous, to say the least. It's an opportunity to visit an untouched part of Fiji and to experience Great Astrolabe Reef, which ranks with Beqa as a top notch dive area.

FIJI CURRENCY

The currency in Fiji is the Fijian dollar, often called "Fiji money." U.S. dollars are widely accepted, as are major credit cards. It is wise to carry some Fiji money for incidentals and the departure tax at the airport ($10 Fijian) is requested in Fiji money.

In October, $1 U.S. equaled $1.45 Fijian. Prices in Fiji are quoted in Fiji dollars and the U.S. dollar buys more than it does back in the old U.S. of A.

THE NORTH

Fiji's second largest island, Vanua Levu, lies northeast of the main island. And, if you're not exactly overwhelmed by development on the main island, you should know it's a thriving metropolis compared to the north. Fiji's Northern Group of islands is a step back in time, to agricultural based economies and simple Fijian village life.

There are no resort style hotels in the north. All hotels are small and all are special. I am a great fan of the north, because the diving is superb and it's a real exotic travel experience, the very essence of every diver's dream. There are small planes, grass runways, virgin walls and reefs. And, to top it off, the dive operators are well equipped and professional, and the small *bure* resorts offer excellent accommodations and good food.

There are two main areas of concentrated diving in the north. One is Savu-Savu and the other is Taveuni. Both are a 45 minute to one hour flight from Nadi on Sunflower or Fiji Air. There's a resort in the north for all levels of diving experience and, for experienced divers, there is some of the best diving to be found anywhere in the world.

SAVU-SAVU

Savu-Savu is on the southern, protected side of Vanua Levu and is surrounded by barrier reef, just like the main island. Because of its large land mass, ancient rivers have carved cuts and passes into the reef and present day freshwater outfalls continue to create new dives as well.

Savu-Savu is a tiny port surrounded by small Fijian coastal villages. The pace of life is slow, the night life non-existent and the shopping limited to occasional Fijian art and rudimentary souvenirs and T-shirts. If you ask for directions anywhere in the north, you may just get a smile and a wave in the general direction you should go. This is not a breach of Fijian hospitality, it just means you've stumbled onto an area of the world where everybody, except you, knows where everything is and no one else ever has to ask directions. That's worth some insight and

Namale Plantation

'Everything a Fine Dive Resort Should Be'

NAMALE PLANTATION RESORT offers three magical ingredients to make your dive vacation memorable: SCENIC BEAUTY that is unique even in beautiful FIJI, with acres of tropical gardens and miles of beach facing the reef-protected sea; PRIVACY for 20 guests in widely-spaced, well-appointed bungalows; and a VARIETY OF ACTIVITIES that range from superb scuba diving and many other water activities to volleyball, tennis and bird watching in the surrounding 121 acre coconut plantation. Namale offers elegant meals, from fresh island food to a gourmet's delight. The friendly and courteous staff of 30 is there to help make a guest's stay perfect.

Bungalow Rates US $120 to $135 per night.

Reserve through your travel agent or call your favorite dive specialist

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KONTIKI RESORTS

SAVU-SAVU, FIJI ISLANDS





KONTIKI

KONTIKI RESORTS, all 150 acres of South Pacific Paradise, are located on SAVU-SAVU, FIJI's other BIG Island, just northeast of your arrival in NADI International Airport. A convenient 45 minute flight to SAVU-SAVU transports you to a FIJI much the same as when Captain Bligh first sailed there. The local villages that dot SAVU-SAVU are rural and agricultural, setting the tone for a relaxed pace of life. **KONTIKI Resorts** is located on the grounds of an old coconut plantation, and just sixteen private cottages, share this spectacular setting.



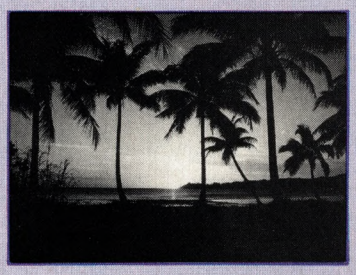
Thatched Roof Bures

BURES (Fijian cottages) are nestled amongst mango, papaya, banana, citrus and coconut trees. Set on the side of a gently sloping hill all have exquisite views of the South Pacific. In addition to your own, modern bure, you also have a stocked refrigerator and hot coffee/tea facilities in your own bure. The bures are decorated in native hardwoods and local art.

Explore The Depths



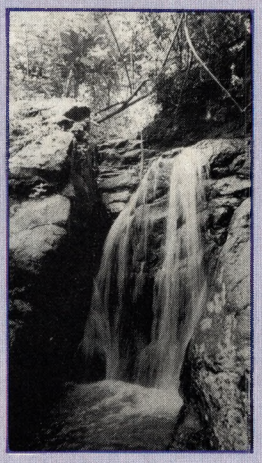
KONTIKI RESORTS has rapidly become one of the premier dive resorts in FIJI. It features a daily schedule that permits divers the option of up to 3-4 dives per day, without missing a meal or long, inconvenient boat rides. **KONTIKI** of any of the resorts on SAVU-SAVU, has the shortest boat rides to the greatest diving. FIVE dive boats (maximum 10 divers per boat) and 100 tanks serve a maximum capacity of 40 divers. PADI trained instructors and divemasters round out the staff... The diving on SAVU-SAVU is dramatic. A huge barrier reef surrounds the coast, and **KONTIKI** is located in a sheltered cove just off the reef. A mere 10 minutes is all that's needed to reach most sites. DREAMHOUSE, LEPER'S WALL, THE CAVERNS, PYRAMIDS, and D.M.F. are just a few of the legends we dive every day. Dropoffs plunging to 500 feet, giant sea-fans, dense marine life, and dramatic pinnacles are served regularly to our guests. Most of **KONTIKI'S** dive sites have permanent moorings, part of our continuing commitment to reef preservation.



Fijian Dining And Entertainment

Are offered at the Main Lodge, the hub of all the activities at **KONTIKI**. Gourmet fare includes fresh lobster, prawns, and mahi-mahi. Breads and cakes are baked daily. Fresh fruit is picked straight from our trees. The PARROT BAR and LOUNGE provides cool, refreshing drinks as well.

Activities Abound



TEE OFF on our new championship golf course. Play tennis on our courts. Or, nearly every afternoon, just ask our staff to get a volleyball game going. FIJIANS are always ready for a friendly game with the guests. Swim in our fresh water pool or try your luck at deep sea fishing, windsurfing, or a Hobie Cat at our marina. Experience "LOVER'S GROTTO," a secluded tidal pool. LUXURIATE under a cool, cascading waterfall. Visit the quaint waterfront town of SAVU-SAVU.



Kontiki IS The South Pacific

KONTIKI RESORTS is a different travel experience. Although you have every amenity offered to travelers worldwide, you will explore a different world in SAVU-SAVU, the world of FIJI. While it's hard to knock the world class diving (and you'll get plenty of that) there are special things to do and see that are uniquely FIJIAN. Visit a village by day, and you'll make friends for life. Join in a "KAVA" ceremony, which includes a bowl of a FIJIAN drink, and is given to each guest (with clapping of hands and appropriate etiquette), and is accompanied by informal talk and song. Visit a village at night for a MEKE, or feast, and you will never forget the beautiful, haunting harmony of FIJIAN song under the stars. At **KONTIKI**, we do everything you expect, & then help you fall hopelessly in love with FIJI.

FOR RESERVATIONS AND MORE INFORMATION CONTACT:

Gemini Pacific Corporation
5140 Birch, Suite 300 • Newport Beach, CA 92660
Phone: (714) 752-0173 • Fax: (714) 752-8341

Kontiki Resorts
P.O. Box 51 • Deuba, Fiji Islands
Phone: (679) 850262 • Fax: (679) 850355

or contact your travel agent
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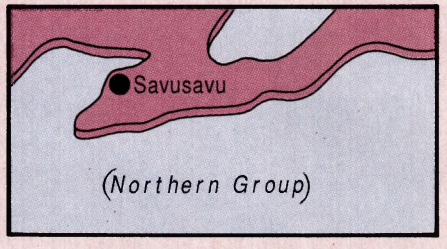
Fiji

a chuckle or two all by itself. The three dive resorts on Savu-Savu fit neatly into niches according to experience: Kon-Tiki is for experienced divers; Namale Plantation is for intermediate divers; and Na-Koro is for novices.

The relationship of the resorts to the walls of Savu-Savu plays an important point in choosing one because the walls and pinnacles are where the action is. Kon-Tiki is closest by far, Namale about a 15 minute ride away, while Na-Koro Resort dives Savu-Savu Bay primarily. The bay sites are nice dives in moderate depths, but not particularly dramatic or challenging. The walls, on the other hand, are steep and big. The pinnacles are fishy and this area probably features barrier reef diving at its best. It's easily as good or better than its Australian counterpart, the Great Barrier Reef, but all barrier reef diving suffers occasionally from the pounding sea. Stony corals are good, the base reef is dramatic, but soft corals are scattered and will usually be found under ledges and overhangs.

KON-TIKI, the newest dive resort on Savu-Savu, is aggressively pursuing the experienced diver. Its diving schedule is set up to compete with live-aboards (three to five dives a day) but allows enough flexibility so a visiting diver can elect to go diving only once a day if it suits him/her. This is achieved by having five small dive boats and by staggering the timing of the dives and the site/depth selection. Kon-Tiki also has a swimming pool, nine hole golf course, two tennis courts and a small marina, so there is no shortage of other things to do.

Kon-Tiki has a beautiful setting, with each of its 16 *bures* perched on a small hill overlooking the sea. There's a private waterfall you can walk to and plenty of villages to visit. The center of activity, the lodge, houses a dining area, bar, boutique and outdoor lounging area. There



are 150 acres of property and each guest gets about five acres to himself/herself, so there's never a problem with privacy. In addition to all the activities available at Kon-Tiki, you can also earn your master's or Ph.D. in doing nothing at all—an art form found throughout the north.

As for diving, Kon-Tiki's 100 tanks, 5 boats, 14 moorings and philosophy of limiting each boat to 10 people seems to be attracting experienced divers. It's a beautiful layout and the staff works hard to keep you smiling.

At NAMALE PLANTATION, your focus shifts from just diving to an appreciation of all nature that surrounds you. Namale's *bures*, only nine in number, are hidden in the carefully cultivated, lush foliage that makes the Garden of Eden look like a strip mall. It is a working plantation (copra), but all the work takes place away from the resort itself. Namale is a study of relaxation and informal tours that take shape at breakfast or dinner, served in the mainhouse, and at which conversation is lively and interesting. If you want to go diving, Namale has an excellent boat and very capable staff, but diving is not the center of existence here. It adds to the appreciation of the unique beauty of Savu-Savu in general and Namale in particular, but a hardcore diver would probably not be happy here. Namale is much better suited for intermediates, with moderate aspirations of 6-10 dives per week.

NA-KORO RESORT, although *bure* style and on a beautiful beach, is the larg-

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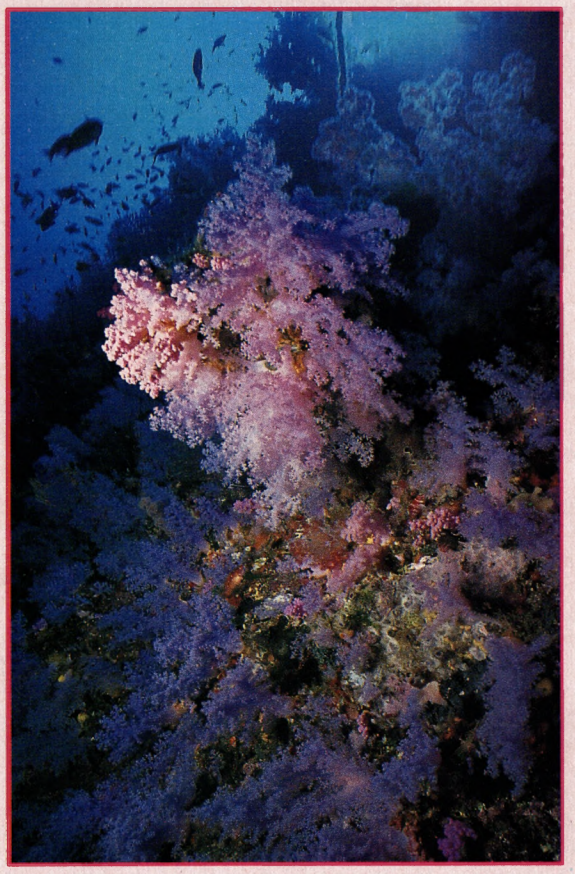
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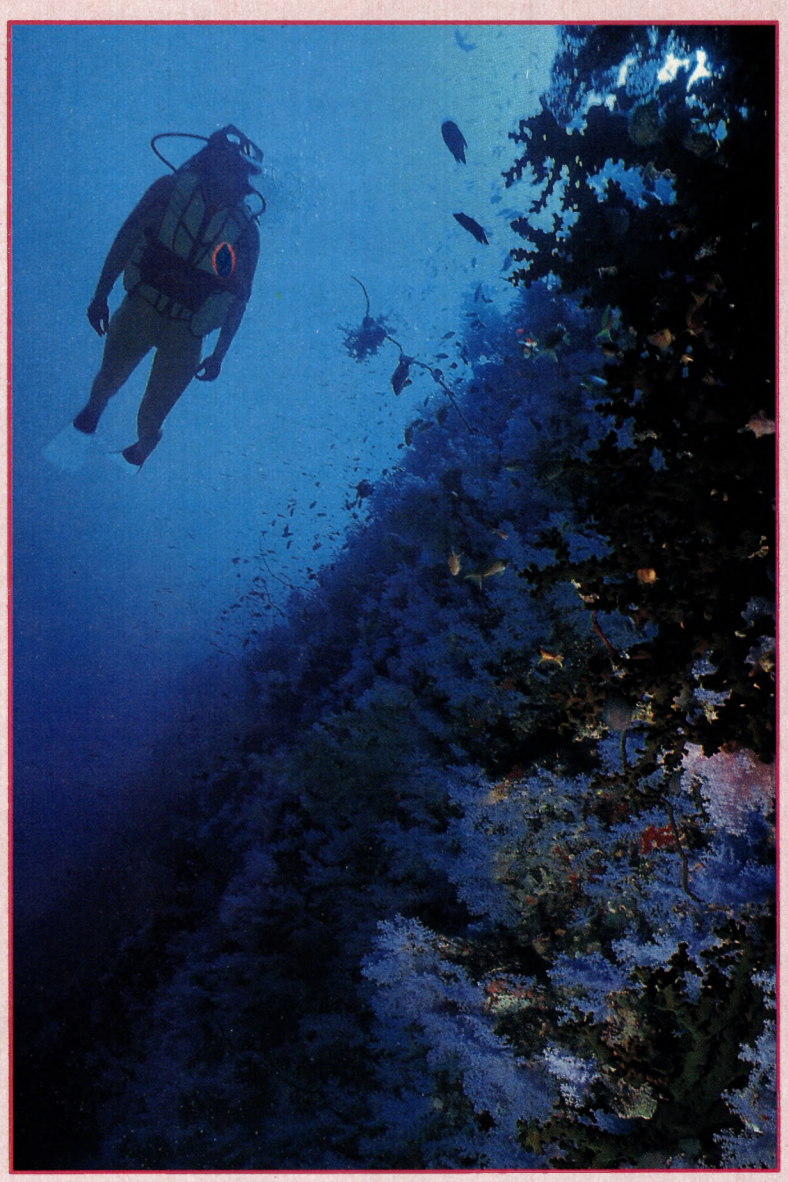
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Fiji's Northern Group boasts some of the best diving in the world. Upper left: A diver hangs motionless, at 110 feet, on a diving legend called The Great White Wall. Above: From a depth of 200 feet to 60, The Great White Wall is covered as far as the eye can see with flowering anemones. Below: Not to be outdone, Rainbow Reef and Matagi Island shine in red as well.



MATAGI ISLAND

"This is the best diving Fiji, and perhaps any place, has to offer."
Skin Diver Magazine
Dec. 1989

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Matagi Island

- 10 Beach Front Bures
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FIJI

est of the three Savu-Savu resorts and has the most traditional accommodations. The main headquarters is quite professional and large, with reception area, bar, restaurant and pool given equal attention. Na-Koro is primarily for families and its activities, far more structured than Namale's, reflect that. Still, it's a very capable and competent resort and would be my choice when traveling with kids or a novice diver.

The diving on Savu-Savu breaks down into two main areas: walls and bay. Kon-Tiki dives the walls almost exclusively, Namale goes by the level of experience and guest preference and can dive both, and Na-Koro dives sites in the very large Savu-Savu Bay.

Some highlights include **Lepper's Wall**, a sheer drop of excessively dramatic proportions. **Dreamhouse**, a seamount, has become a magnet for schooling barracudas, jacks and all sorts of other fishy friends.

D.M.F. (Deep My Friend) is a delight that finds you on the top of a pinnacle at 85 feet. It looks even better at 120 feet, so watch your depth (and time).

On the bay side, the sites tend to be shallower, more protected and less dramatic than the wall sites. **Mystery Reef** features mushroom cap corals that are massive and neat to explore. **Alice In Wonderland** is another site on this same reef that stretches the length of the bay. There are more pelagics and fish here and we saw a couple of bronze whalers off in the blue!

TAVEUNI

Taveuni is an island of pure diving delight. Even in a destination with the range of world class diving that Fiji has, the ultimate question, "but where's the absolute best diving?" is usually raised. The answer, for experienced divers, is the reefs of Taveuni. There are three small, world class dive resorts and one live-aboard that can be reached by touching down on the grass runway at Taveuni. You fly there from Nadi or Suva and the flight takes a little more than an hour. But, you will feel that Mr. Scott has beamed you down to another planet; such is the marvel and wonder of the underwater world of Taveuni.

The three resorts are on three different islands. Each is small. Each is a wonderful and special dive resort. Each is a secret that is being kept from all but a special few. Ric Cammick's Dive Taveuni is just a couple of minutes from Taveuni's airport. Matagi Island is a quick cab and boat ride (20 minutes) away. *Matagi Princess* also makes her home there. And, Qamea Beach Club also is just a quick cab and boat ride away. Now, you'll probably be tired when you get there. You've flown to Nadi from the states, cleared customs, got your bags, made your flight to Taveuni and you'll be wondering, is it worth it?

The answer, at any of these resorts, is a resounding yes. The waters of the north churn and swell among these islands, creating a fantasy of soft coral walls that defines the term world class diving. The water is crystal clear and the reefs explode with color. This one's white, that one's red, that one's purple. Huge stretches of soft coral thrive here, their daily meals brought to them courtesy of the rise and fall of the tide, and current is the ticket that will be punched if you choose to dive here. It is a simple, basic fact of diving. If you want to see soft corals blooming, fully extended in unbelievable glory, you must time your dive carefully to minimize current (which can get very strong) and maximize the time when the corals are open and feeding.

The entire operation at DIVE TAVEUNI is geared for experienced divers and photographers. Eight comfortably furnished *bures* are your accommodations. All activities take place in the mainhouse. Meals are eaten family style, since 16 divers is the maximum capacity of Dive Taveuni. The resort sits on a hill overlooking the sea and the grounds are landscaped with flowers, citrus trees and plants of every size and description. The beach is just a short walk away and expect no crowds. Taveuni is just Fijian villages and a few general stores and represents a South Pacific untouched by the passage of time.

You'll meet Ric Cammick, who left New Zealand 17 years ago because he dived Taveuni and couldn't believe what he saw. He started his resort on a dream and it's turned into a dream resort. His dive boat is a big, rugged, custom built aluminum vessel with plenty of shade, a head and a cabin. You'll spend plenty of time on this boat—from about 9:00 am to 2:30 or 3:00 pm every day—chasing the currents of the **Somo Straits**. Ric's experience is valuable, because when you talk current here, you are not talking about a drift dive where the current flows parallel to the reef. Here, the current flows directly on the reef, causing soft coral feeding frenzies. You go down a line to the bottom, usually in 30 or 40 feet, and feel the full force of the current. You make your way to the wall against the current and descend. The deeper you go, the gentler the current. All you do is repeat the process, with the current behind you, to return to the boat. It is a little unsettling for new divers, but experienced divers think it's a small price to pay for diving some of the best reefs in the world. Even if you're new to the current game, Ric and

his staff will show you all the little tricks that make it easier.

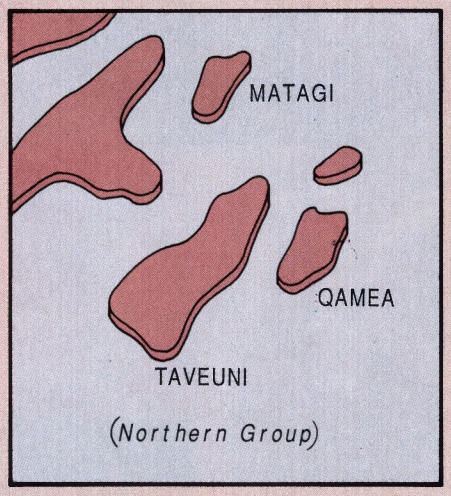
You must dive the **Great White Wall**: Here you descend in a tunnel to 90 feet, swim out and left to the wall, and hold on to your regulator. The wall is awesome: Steep, sheer and vertical, it drops from 50 feet to 240. All of it is covered with a carpet of white flowering anemones. If you've dived the Great White Wall, you're a world class diver.

Ric has tried hundreds of dive sites and selects the best ones based on tide and current. **Rainbow Reef** is yet another, but here the dominant color is red. There's plenty of fish and pelagics around as well.

If you prefer purple to red, a trip to **Matagi Island**'s purple wall is in order. Same story, different color.

MATAGI ISLAND is 240 acres in size and has a stunning beach. Nestled in the palms are 10 beachfront *bures* and the main *bure*. This resort is world class as well. The accommodations and meals are superb and the ambiance is quiet, relaxing and charming. While Matagi dives some of the same sites Ric Cammick does, it also has a number of its own. Standard drift diving techniques are used on certain sites; all you do is drift with the current and return to the boat after each spectacular dive. Your hosts are the Douglas family, who used the island as a private retreat until they decided to share it with visitors. At Matagi, both current and still water sites are dived, and it's an even coin toss as to which resort—Dive Taveuni or Matagi Island—to stay at. The only difference I saw is that Dive Taveuni caters to experienced divers, while Matagi takes excellent care of experienced and intermediate divers.

Just offshore, you will get a glimpse of *Matagi Princess*, a 75 foot live-aboard that was launched in December. Carrying eight divers in four staterooms, this custom cruiser reemphasizes Matagi's commitment to providing world class diving. It's possible to combine a land-based and live-aboard stay at Matagi and that's an option worth pursuing. There's more great diving just out of reach of any of the day boats, since small islands seem to be as numerous as the coconut trees. *Matagi Princess*' range will get you there and the Douglas family will make sure that it's done in style.



At QAMEA BEACH CLUB, the pace is geared for relaxation and the diving is geared to the novice or intermediate diver or to the guest who elects to dive only a couple of times a week. The *bures* are elegant and the overall ambiance, sophisticated and upscale. There are only ten *bures* accommodating a total of eight to ten divers per week and the mix of guests is often fascinating.

In these small, unbelievable resorts in the north, diver's dreams come true every day. Topside you can visit waterfalls, villages and just relax. If there's nightlife, I've never seen it, save for informal meetings of new and old friends. There's usually a *meke* every week at Matagi or Qamea and waterfall and village visits are a weekly staple at Dive Taveuni. The north is an odyssey and nightlife and restaurants would not add any significant benefit. World class diving in a setting of an undisturbed South Pacific fantasy is the story of the north.

"To A Diver, Taveuni Is Awesome"

SKIN DIVER, Dec. 1989

- 17 years of diving experience
- 8 private bures
- Experienced divers preferred
- Daily two-tank diving
- Breakfast, lunch and dinner



We invite you to dive Taveuni, which began as our dream 17 years ago. We will treat you as guests in our home, and our staff will make sure that we will see you, our new friends, again and again.

Ric and Do Cammick

On our custom built 36' dive boat, you'll dive the best sites Fiji has to offer, Great White Wall, Cabbage Patch, and Rainbow Reef, just to name a few.

"If you want the credentials of a world class diver, spend a couple of days with Ric . . ."
SKIN DIVER, Dec. 1989

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DIVE FIJI





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For more information
contact your travel agent, or:

FIJI VISITORS BUREAU

Fiji Visitors Bureau

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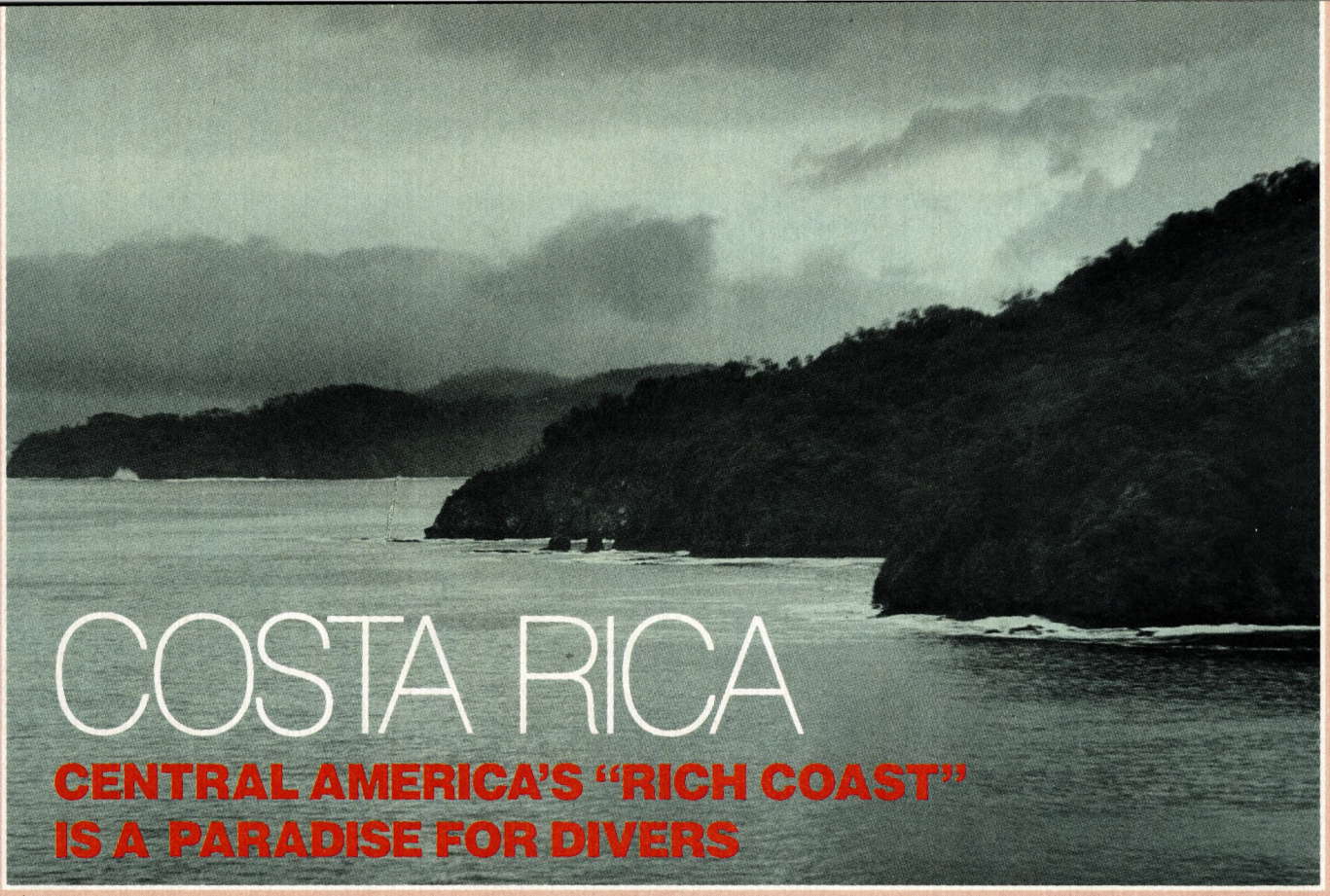
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The hospitality people of ITT

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COSTA RICA

CENTRAL AMERICA'S "RICH COAST" IS A PARADISE FOR DIVERS

TEXT AND PHOTOGRAPHY BY RICK FREHSEE

Turquoise waters bordering palm lined beaches; fish filled underwater panoramas; a chain of smoldering volcanoes reaching toward the sky; sprawling tropical rain and cloud forests; scenic waterfalls and tumbling whitewater streams; great green savannah; and dense jungled mountains partially hidden in a blanket of mist and steam—search hard and long, you will be hard pressed to find a country as glorious in its celebration of nature as Costa Rica.

This is a country I had looked forward to launching a personal discovery of for some time. The reality of being there has only magnified the possibilities and increased the desire to return. I explored the underwater world of Costa Rica's Pacific shore and was met by an unending parade of marine life that exceeded anything I had seen in 20 years of Caribbean exploration. There is more diversity, adventure and natural beauty per square mile here than anywhere within the western Caribbean-Central America realm.

Christopher Columbus discovered Costa Rica during his fourth and final voyage in 1502, naming it "rich coast" under the assumption the land would yield rich deposits of silver and gold. While that never happened, the name perfectly describes the natural beauty found here.

Costa Rica is a small country, about the size of West Virginia, sandwiched between Panama to the south and Nicaragua to the north. Contrary to its position in this sometimes turbulent region, Costa Rica is a very safe place to visit or live. One of the oldest democracies in the Americas, the country became free from Spain in 1821 and began a long and continuous tradition of peace and relative prosperity. Slavery has never existed here, the death penalty was abolished more than a century ago and, in 1949, the national army was abolished. In 1988, Costa Rica's president, Oscar Arias, received the Nobel Prize for his leadership in the Central American Peace Initiative.

The second major superlative to be considered by the potential traveler is this country's marvelous focus on the conservation and preservation of its considerable natural heritage: The biological diversity found in Costa Rica is one of the greatest anywhere in the world. There are more species of birds here than in the whole of North America, more species of orchids than found in the continent of Africa and within the space of sometimes less than 100 miles, access to both the Caribbean and Pacific coasts. And on the way, you pass through many of the most impressive cloud forests and the longest continuous volcano chain in the Americas. In Costa Rica there are more biological reserves and national parks on a relative scale than anywhere in the world.

This makes Costa Rica an incredible opportunity for adventure travelers, bird watchers, nature lovers, kayakers, whitewater rafters, trekkers, surfers, photographers and, of course, divers. Combine that with the fact that the facilities are well planned, the hospitality is unusually friendly, the roads are generally good and that you are in the most prosperous country in Central America and you have a picture of a complete destination.

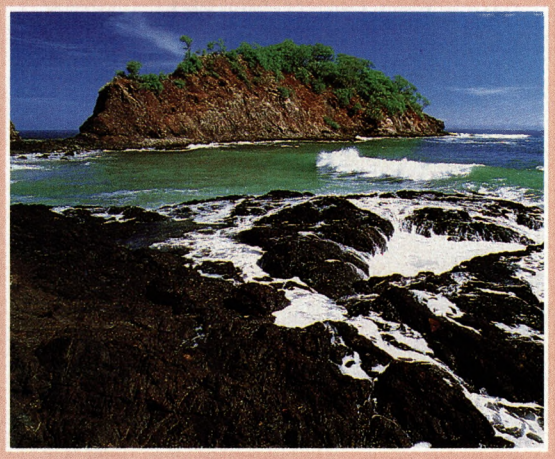
That the diving is so spectacular was indeed a pleasant surprise to me. We had heard that the Caribbean coast was secondary to the fish filled thrills of the north and south Pacific coasts so we wasted no time having a look in that direction. Our first stop was with Ecotours, a division of Tikal Tours, one of the best established and most progressive tour agencies within Costa Rica. Its representatives met us at San Jose International Airport, as they do all incoming groups. After an efficient and speedy customs check, we were on our way via van to the Pacific coast. The pleasant four hour trip along the Pan American Highway was our first look at the diversity of this amazing country. By nightfall we had arrived at our first stop on the north Pacific coast.

We awoke, rested, at dawn. The morning light revealed the spectacular, sprawling, red tile roofed presence of Condovac, 101 villa-condos staggered along a considerable hillside. Completely remodeled in November 1988, each villa features a living room with two sofa beds, a full kitchenette and bath, a color TV (satellite), air-conditioning, telephone and a bedroom with one twin and one single









Search hard and long, you will be hard pressed to find a country as glorious in its celebration of nature as Costa Rica. The biological diversity found here is one of the greatest anywhere, and the diving on the country's northern and southern coasts is spectacular. Clockwise from below: Schooling fish in the Bat Islands; the rugged beauty of Costa Rica's northern Pacific coast; Condovac resort; sunset at the seashore; river rafting.



bed. A restaurant and two snack bars, a pool, tennis court and disco are on the premises. Down the hill from our villa we found a wide butterscotch colored beach, a variety of watersports vehicles, including windsurfers and Jetskis, and the dive center, a pleasant, circular building of modern/traditional architecture with an impressive boutique interior.

Diving Adventures features two compressors, 15 full sets of rental gear and utilizes three mid-sized boats. Manager Butch West is a veteran of 10 years in the Marine Corps and has had considerable experience as a scuba instructor in Texas and California. His right hand man is Tim Gilkey, a PADI divemaster and experienced Costa Rica diver.

This operation is perfectly positioned to visit clusters of islands a mile or two offshore as well as the **Murcielago** (Bat Islands), 27 miles away. Inshore visibility averages 40 feet, around the offshore islands it is usually 20 feet better. Temperatures are mild, but there are some thermoclines that indicate the need for a wetsuit jacket or a thin jumpsuit year-round. The Pacific is influenced more by tides and phases of the moon than the Caribbean, therefore, conditions are variable. The reward is a spectacle of marine life that does not allow one minute of boredom or indifference during a dive.

Our first dive with Butch and Tim was at **El Mirador**, an exposed rock surrounded by the blue Pacific. Normally the

(Continued on Page 128)

ANTILLES AGGRESSOR





Antilles Aggressor **carries divers to some of the best locations off Curacao and Bonaire. Since the vessel moors over the sites, divers rarely have to swim more than 100 feet. The food is excellent and plentiful and the crew helpful.**



Dive/Cruise Adventures In Curacao and Bonaire

TEXT AND PHOTOGRAPHY BY JIM CHURCH

My first impressions of the *Antilles Aggressor* were formed by her sleek appearance and excellent condition. She had been rebuilt to serve as a comfortable dive platform and a quick tour of the galley, living quarters, dive deck and engine rooms showed she was well maintained. But a quality dive vessel is more than appearance and condition—it's the people aboard and the educational programs offered that make *Antilles Aggressor* a proud member of the Aggressor Fleet.

Captain Larry Williams was carefully selected (as are all other *Aggressor* captains) for his competence and charisma. To his guests, he is the thoughtful host, to his crew, the skilled seaman. Captain Larry not only handles the responsibility of being a captain well, but is willing to step in and help with the "dirty work" when needed. First mate Danny Schard's talents and skills blend well with the captain's. Danny is good with people and easily takes charge when Captain Larry needs a break. Chef Roland Deknegt is a rare find: a master chef in my book and an excellent divemaster as well. Photo pro Barry Oppen handles the on-board photo coaching and instruction. He gives invaluable assistance with both equipment and subjects when visiting U/W photographers teach courses and seminars. During my photo course aboard *Antilles Aggressor*, Barry was a valuable member of the team. All of the crew members are, of course, qualified instructors who enjoy working with new and experienced divers.

IT'S LAZY LIVING

I say "lazy living" because you virtually live and sleep over the dive sites. Your stateroom has two bunks—a three-quarters sized lower and a single upper bunk. A couple can share the

lower bunk and use the upper for storage. Each stateroom has its own sink, two heads and showers are nearby. The air-conditioning is adjustable and each bunk has its own adjustable reading lamp.

Take a few steps up the stairway (oops, ladder) to the main saloon and enjoy breakfast. If you're on a health kick, you can have cereals and fresh fruit. If you want something more traditional, bagels, toast, bacon, eggs and omelets are served. Coffee and tea are always ready and decafe is available.

After breakfast, you stroll out to the dive deck where Barry Oppen gives the morning dive briefing. He uses a large board and colored pens to draw a detailed map of the site, including depths, topographical features and the lairs of special critters. His talks are accurate, informative and brief because he knows you are anxious to go diving.

Between morning dives, cookies, cakes and other delicacies are served as snacks. Lunch poses a special problem for some divers: While the divemasters work to get weight off some divers, chef Roland delights in putting weight back on them. The food is so good and plentiful that dieters may have trouble doing push-aways from the table. The sandwiches are gourmet treats, the special breads are out of this world and the salads and fresh fruit, abundant.

After lunch you can continue diving, grab a book from the ship's library and head for the sundeck for some relaxation or go below for a nap. Late afternoon snacks are served between dives. The topside evening buffet is the social event of the day. The variety offered is greater than you would expect on a liveaboard. Entrees include fish, chicken and barbecued beef. Other dishes include pastas and salads. The ingredients that lead to second helpings are the dressings, sauces and seasonings. Again, chef Roland loves to add weight to his guests.

The night dive beckons the stout of heart. Some guests, however, prefer to watch videotaped movies as they munch on dessert. All in all, it's lazy living.

IT'S EASY DIVING

The *Antilles Aggressor* isn't cramped; 16 or more people can gear up at once without congestion. The shaded dive deck covers the aft one-third of the main deck. Each diver has his/her own large locker and two full tanks. You can sit on the lid of your locker and easily slip into the straps of your BC. From there, it's only a short walk to the twin ladders leading down to the dive platform. The crew members will assist you in any way and hand you your camera while you are in the water. At the end of your dive, they slip the empty tank out of your backpack and you can rinse off under one of the twin freshwater showers before heading for your locker. If you have camera gear, just hand it to a crewmember and it will be placed in the freshwater rinse tank. When it's time to dive again, you'll find two fresh tanks by your gear locker.

Because *Antilles Aggressor* moors over the dive sites, you rarely need to swim more than 100 feet. Some divers, however, swim farther to explore the U/W terrain. At the wrecks of *Hilma Hooker* and *Superior Producer*, the mooring lines are attached directly to the wrecks. At Town Pier and Customs Pier, *Antilles Aggressor* ties up to the piers. You simply step off the dive platform and you are on the site.

You can easily make 25 or more dives during the week. You dive almost anytime you wish, day or night. Your basic limitation is your computer or dive tables. The divemasters will either give you a tour or allow you and your buddy to explore on your own: It's your decision. This freedom to dive is hard to beat!

A PHOTOGRAPHER'S DELIGHT

U/W photographers have special needs. First, they need space for their expensive and sometimes bulky cameras. For photographers, *Antilles Aggressor* has a large, three level camera table about six feet square. The lower deck level is for large camera cases, the second layer has individual baskets for smaller items and the table top is for assembling your camera equipment.

Second, U/W photographers often need backup equipment. *Antilles Aggressor* has a respectable inventory of rental equipment and a supply of film and batteries. Photo pro Barry Oppen is always ready to offer advice or furnish equipment as needed.

Third, U/W photographers want overnight processing and *Antilles Aggressor* offers even better service. The crew makes several E-6 runs (for Ektachrome and Fuijichrome color slide films) each day. The policy is to process any time six rolls are placed in the processing box. Thus, you can often shoot slides in the morning and see them before shooting that afternoon.

Fourth, U/W photographers need to see and mount their slides so they can evaluate their progress. Two large light boxes slide out from beneath the twin tables in the main saloon and slide mounts and a slide mounting heat press are available. Thus, you can see your slides and discuss them with Barry and the other photographers daily.

Fifth, U/W photographers don't like to have the boat moved for each dive. They'd rather repeat dive sites with a different lens or reshoot previous subjects. *Antilles Aggressor* isn't moved if the majority of the guests want to stay at a particular site for another dive.

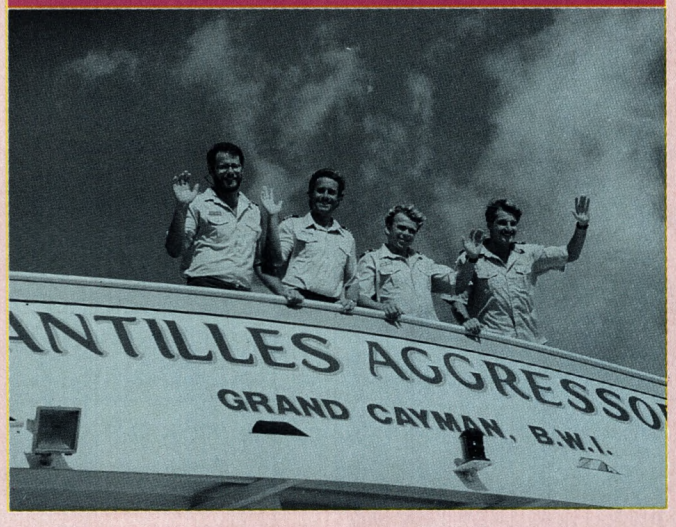
INSTRUCTIONAL PROGRAMS

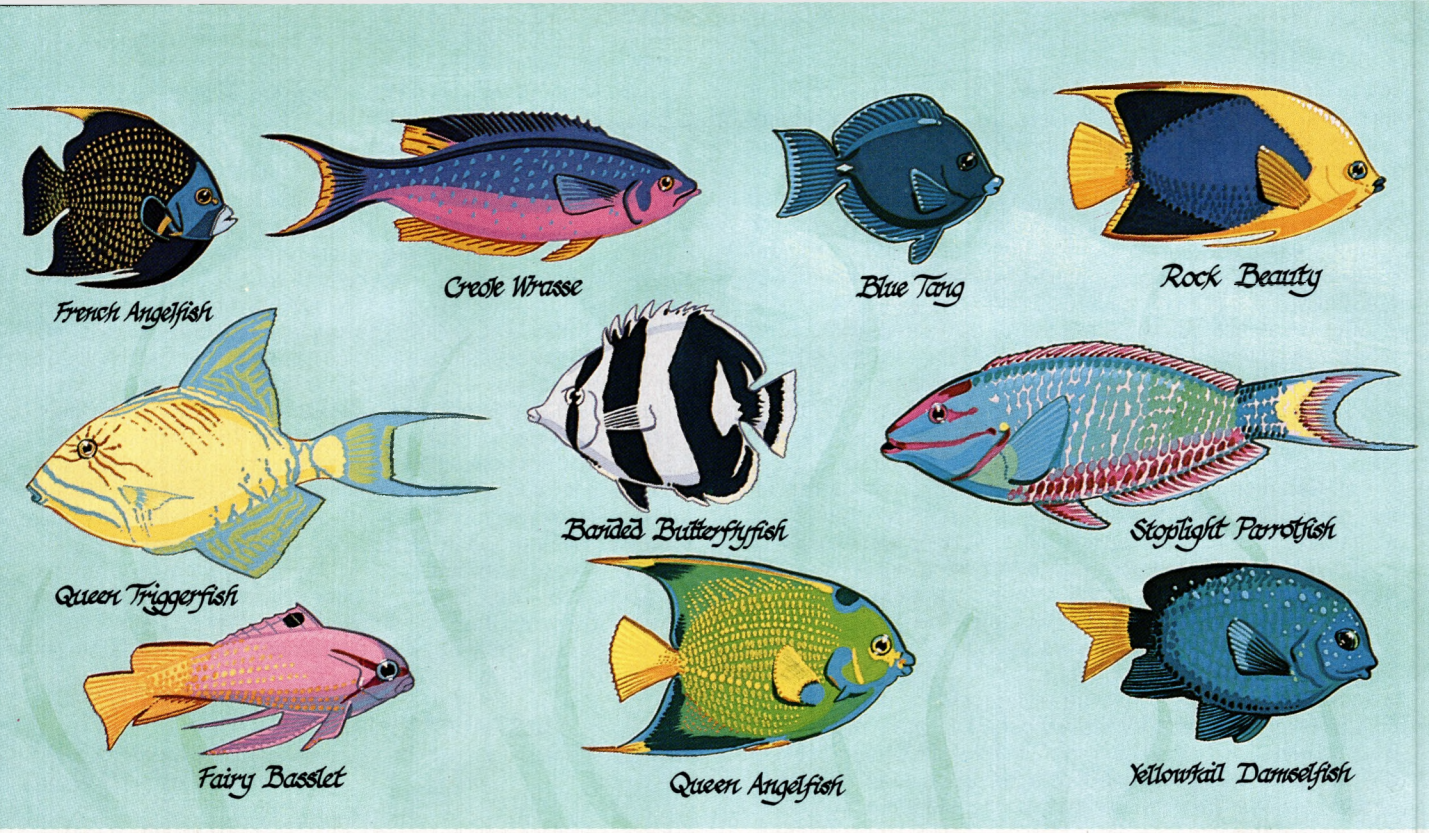
Several specialty courses—such as certification, night diver

(Continued on next page)



Above: A dive briefing on the *Antilles Aggressor*. The divemasters will give you a tour or allow buddy teams to explore on their own. Several instructional programs are offered as well. Below: The crew of the *Antilles Aggressor*.

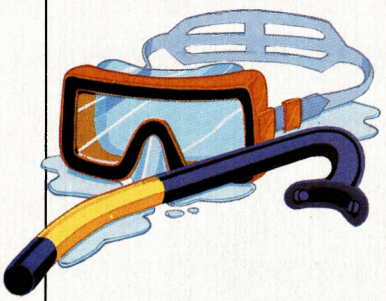


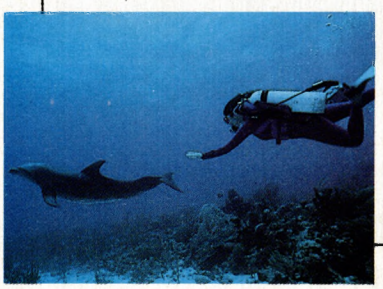



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ANTILLES AGGRESSOR

and U/W photographer—are available from the crew. In addition, visiting professionals also teach specialized courses during certain cruises. For example, I will be on the *Antilles Aggressor* from May 26 to June 2 to teach another Multi-Level Photo Course. This intensive course features slide talks, demonstrations and help both topside and underwater for Nikonos, housed camera and video photography.

Students receive instruction tailored to the specific sites visited. The instruction covers both the topside and U/W aspects of photography. Film is processed and critiqued daily so mistakes can be corrected quickly. Then students can go back and shoot for even better results. Learning couldn't be easier or more fun!

Barry provides excellent support for visiting photographers' courses. He handles equipment rentals, basic repairs and film processing. But even more important, Barry, and the other crewmembers, know how to find the best subjects at each site.

THE DIVE SITES

Because there isn't space to describe each Curacao/Bonaire dive site individually, this paragraph is a composite of what you can expect. Most sites feature a relatively flat bottom at about 40 feet, with a sloping wall plunging to several hundred feet. You will see long, purple tube sponges, graceful seawhips, bright orange elephant ear sponges and textured vase sponges. The seascape is dotted with angelfish, blue tangs, grunts and other fish. Banded coral shrimp, arrowcrabs, octopus, eels and other close-up subjects hide within the layered corals. Water temperatures (in October) ranged from 80 to 83°F, depending on depth, and visibility was 80 to more than 100 feet.

The most impressive wreck dive (for me) was ***Superior Producer***, a 200 foot freighter that went down in 1977. Resting upright in about 100 feet of water, she is a haven for corals, sponges and other sealife. The interior of the wheelhouse is adorned with yellow cup corals and air pockets in the overhead provide reflective views of divers peering through windows and hatchways. A new wreck, ***Hilma Hooker***, lies on her side in 100 feet of water. Although she doesn't have the lush growth of the *Superior Producer*, her propeller, rudder and cargo booms make great backdrops for wide angle photos.

Town Pier and **Customs Pier** are best for night dives. The bottom is littered with tires, cans and other debris that hide eels, octopus and other shy creatures. However, the colorful stuff is on the pilings. Frogfish, crabs, seahorses and other interesting critters live in the sponges and cup corals that encrust the pilings.

A guest on his first *Antilles Aggressor* trip, Gary Anderson, described the diving as follows: "I love the special world that only exists for macro photographers. My favorite dive site was **Orca Sponge Wall**, at the southwest corner of Klein Bonaire. It was truly a dream come true. On one night dive I found a group of flamingo tongues, pastel colored lettuce slugs, pink tipped anemones, bristleworms, Christmas tree worms and a seahare. It was unbelievable!"

Debby Odom, who took her first U/W pictures with a 1:2 extension tube beneath the Town Pier during a night dive, was excited. "I didn't realize how much life and color I would see," she said. "There were yellow cup corals, tiny crabs and even a small eel. U/W photography has opened by eyes to a view of diving I'd never seen before."

Bonnie Jack, an experienced U/W photographer making the transition to U/W videography, was excited with the subjects she found—the colorful life on the pilings of Customs Pier, the forms and shapes on the *Superior Producer* and the fish life at the other sites. Bob Jack, her husband, shot several 15mm wide angle shots of Bonnie framed with purple tube sponges at **Myles' Dream** and wide angle close-ups up of Bonnie at work on other sites.

THE BOTTOM LINE

The bottom line is simple: *Antilles Aggressor* is a live-aboard boat for divers. Diving isn't a secondary activity the crew merely tolerates, it's the reason for the cruise. A 110 foot vessel, with 16 guests and a crew of four, *Antilles Aggressor* is (in my opinion) the optimum size for a live-aboard dive boat. On smaller boats, tempers can wear thin. On larger boats, a close-knit relationship among guests and crew may be difficult to attain. *Antilles Aggressor* is neither too small nor too large—it's just right!

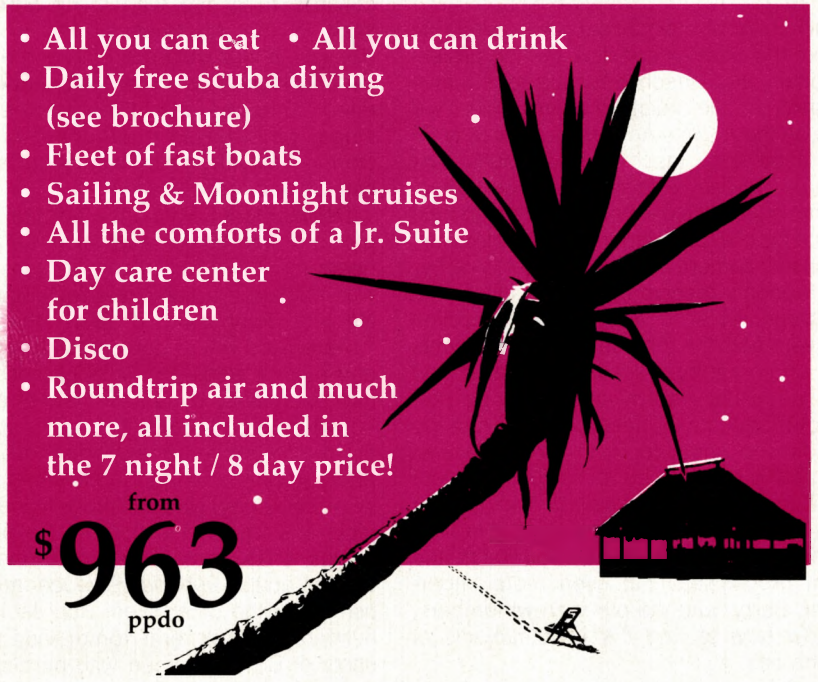
For more information about a cruise or specialty course aboard *Antilles Aggressor* (or other Aggressor Fleet vessels) contact Aggressor Fleet Ltd., P.O. Drawer K, Morgan City, LA 70381-000K; (800) 348-2628; in Louisiana, (504) 385-2416. The fax number is (504) 384-0817.

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Surfside Watersports now has new owners. Local interest in the company was so high that 14 people formed an investment group called Combined Cayman Investments, Ltd. Some of these people have their own diving operations on the island. The same dedicated staff members are still working hard to ensure you have a great vacation on Grand Cayman. Both locations—Rum Point and George Town—are looking forward to serving old friends as well as new ones.

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SS CENTRAL AMERICA

(Continued from Page 10)

wheelers sailing between New York and Panama was the 272 foot long wooden-hulled steam vessel SS *Central America*. In her 43 successful voyages from Panama to New York, this vessel delivered nearly 20,000 passengers and about one-third of all the gold shipped from the California gold fields.

On her 44th round trip, north-bound from Panama to New York via Havana, Cuba, the SS *Central America* ran into trouble. On Wednesday, September 9, 1857, only one day out of Havana, she ran into heavy weather, the fringes of a Caribbean hurricane. The next day, the storm worsened. Thomas W. Badger, a ship captain returning to Baltimore, Maryland via first class cabin, said, "On Thursday it blew a perfect hurricane and the sea ran mountainous high."

A wealthy honeymooner named Adeline Mills Easton, returning to the East from San Francisco, said, "About noon on Friday, the vessel suddenly careened to one side and, looking toward our porthole, I noticed that it was underwater."

Another first class cabin passenger, Virginia Birch, a dance hall girl in San Francisco—who used the stage name Jenny French—said, "On Friday the sea broke over us in avalanches, completely swamping the cabin and staterooms, and the vessel would be so completely buried that it was dark as Erebus."

It was too much for the sidewheeler. The vessel began taking on water. This created a domino effect. The fire rooms flooded and put out the fires. The boilers lost steam. The pumps, working by steam, stopped. Water in the hull gained in spite of the heroic efforts of crew and passengers. Frank Jones, a wealthy Kentucky planter in a first class cabin, reported, "All hands, passengers and crew were ordered to go to work bailing, as none of the steam pumps would work. All of us knew how desperate was our situation and everyone worked with a will."

On Saturday, about noon into the third day of the hurricane, the skipper of the *Central America*, Captain William Lewis Herndon, hailed the brig *Marine*, wallowing in the same heavy seas. The captain of the brig brought his vessel, also crippled by the hurricane and under sail only, near the stern of the sinking *Central America*. First class passenger, Obed Harvey, a physician from Placerville, CA, reported, "The dangerous, heroic and almost superhuman effort in transferring the women and children . . . to the brig *Marine* can scarcely have a parallel."

With undaunted effort and superb seamanship on the part of the crews of both vessels, 59 women and children and 41 male passengers, as well as the crew members who rowed the lifeboats, were evacuated. But the brig *Marine*, herself

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SS CENTRAL AMERICA

crippled, was torn away by the storm and could not get back to the striken *America*.

A passenger in steerage, William Chase, a miner from Washtenaw County, Michigan, stated in his report, "A great many of the passengers were miners, having considerable sums of gold about them, the product of years of toil; but the love of gold was forgotten and many a man unbuckeled his gold stuffed belt and flung his . . . treasure upon the deck."

Soon after nightfall it was clear the vessel was going to go down. The exhausted crew and passengers gathered on deck. Captain Herndon fired three rockets into the air to signal the sinking. Approximately 18 minutes later the SS *Central America* was finally at rest a mile and a half below the surface.

Seventeen year old Henry T. O'Connor, a printer/typesetter from Albany, New York, a steerage passenger, told his story: "When the vessel sunk we went down with her, and a good way down. When I came up there were hundreds of human heads all around me."

Another incredible event in this tragic story was that the Norwegian bark *Ellen*, passing through the area at night, heard the cries of survivors and was able, under sail only, to pluck 50 men from the water. In his report, physician Obed Harvey said, "We discovered the rigging of a vessel at a distance, and taking renewed courage . . . we soon reached the *Ellen*. A rope was thrown to me and having been drawn to near the top of the vessel . . . I fell three times into the water. Finally a ship's rope ladder was thrown out, to which, as the last desperate effort I tangled myself into it some way and was taken on board."

A final rescue of three men, barely alive, who had drifted 476 miles in nine days in a lifeboat, brought the total saved to 155. Four hundred and twenty-five were lost when the vessel and her cargo of three tons of gold went to the bottom of the sea.

THE SEARCH FOR THE CENTRAL AMERICA

Founded in 1984, the Columbus-America Discovery Group is: "a multi-disciplinary organization formed to explore deep ocean cultural sites and recover artifacts of intrinsic and historical value." The enterprises of the organization are privately funded through very large investments by individuals. It appears the Group has developed a business approach and operational philosophy that can safely research, search for, study and recover bits of historical treasure, whatever that might be—and where the very large investments needed for such work can be recouped for the investors.

According to Columbus-America the management team is comprised of Tommy Thompson, principal director, along with Robert Evans and Barry Schatz, directors. Other experts in various research disciplines are consultants. The financial risks of shipwreck searches are great. But, if an extremely valuable cargo can be found and recovered, the benefits of research and discovery are financially viable. The Group began intensive research into historic shipwrecks.

One of the sunken vessels chosen by the management team was the SS *Central America*. The Group conducted a multi-disciplinary investigation into the location and cargo of the vessel and to develop sophisticated deep ocean technology needed to locate, explore and recover the remains of a ship from deep water.

In 1985 and 1986 nearly $1.5 million was raised from private investors to finance the hunt for the wreck and cargo. After a long period of research by 11 in-house members of the Group, enough historical data had been gathered from hundreds of sources to begin the actual ocean search.

The search expedition was launched in the summer of 1986. Highly sophisticated techniques were used, incorporating complex computer programs to analyze and correlate the known data. Probability maps were developed that suggested the wreck was likely to lie within a 1,400 square mile grid of the ocean floor nearly 200 miles off the coast of the Carolinas. With wide-swath sonar technology the ocean floor in the area known as Blakes Plateau was covered in only 40 days. But it would be more than a year before the Group could verify that one of the ten targets revealed in digital sonar images on a color computer screen was probably the SS *Central America*.

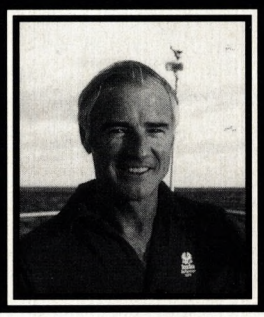
Another technological innovation developed by the Group was a unique, unmanned, deepwater excavation and recovery vehicle. They called their invention *Nemo*; the first remotely operated vehicle (ROV) designed specifically for underwater archaeology. Versatile *Nemo* is comprised of modular units that can be reconfigured to meet existing needs. Robotic arms, stereo 35mm cameras, 3-D color video, two types of sonar and a powerful on-board computer make *Nemo* capable of performing a wide variety of deepwater chores.

The group also had to solve two complex navigational problems. Precise positioning is critical for both the research vessel and for the ROV. In deep water, out of sight of land, the research vessel, *Arctic Explorer*, had to be kept directly over the sunken vessel. Also, the position of *Nemo* had to be known to within about one foot. The first problem was solved with the help of satellite navigation systems and specially designed computer software that controlled the action of two thrusters mounted on the vessel's sides; equipment that neutralized the effects of wind and currents on the ship and main-

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tained her position within a few yards, even in stormy weather. To keep *Nemo* properly positioned the Group planted acoustic transponders around the wreck. These formed a grid that closely monitored and maintained the ROV's position.

In July 1987, the first artifact from the SS *Central America* was recovered. It was a piece of anthracite coal, used to fuel the boiler fires of the sidewheeler. This seemingly unimportant piece of material was airlifted to U.S. District Court, sitting "in Admiralty," in Norfolk, Virginia. Several days later a decision was handed down, based on Admiralty Law, that protected the Group's enterprise and established legal rights for individuals on the deepsea floor for the first time in history. The court ruled that the wreck belonged to the Group as long as it acted in good faith to preserve the scientific, historical and archaeological value of the wreck site.

During the summer of 1988 *Nemo* was upgraded. A sophisticated sonar grid was established for the precise measurement of the wreck site. And, importantly, the 300 pound bronze bell of the SS *Central America* was recovered, positively establishing the wreck's identity. Complete mobilization of some 20 carefully selected crew members and all equipment followed.

By July 1989, sea trials of the thrusters, navigational systems and the control umbilical had taken place. The research vessel *Arctic Explorer* arrived over the wreck and the upgraded *Nemo* was directed through a series of passes over the site. The debris field from the wreck was spread along a 100 yard area.

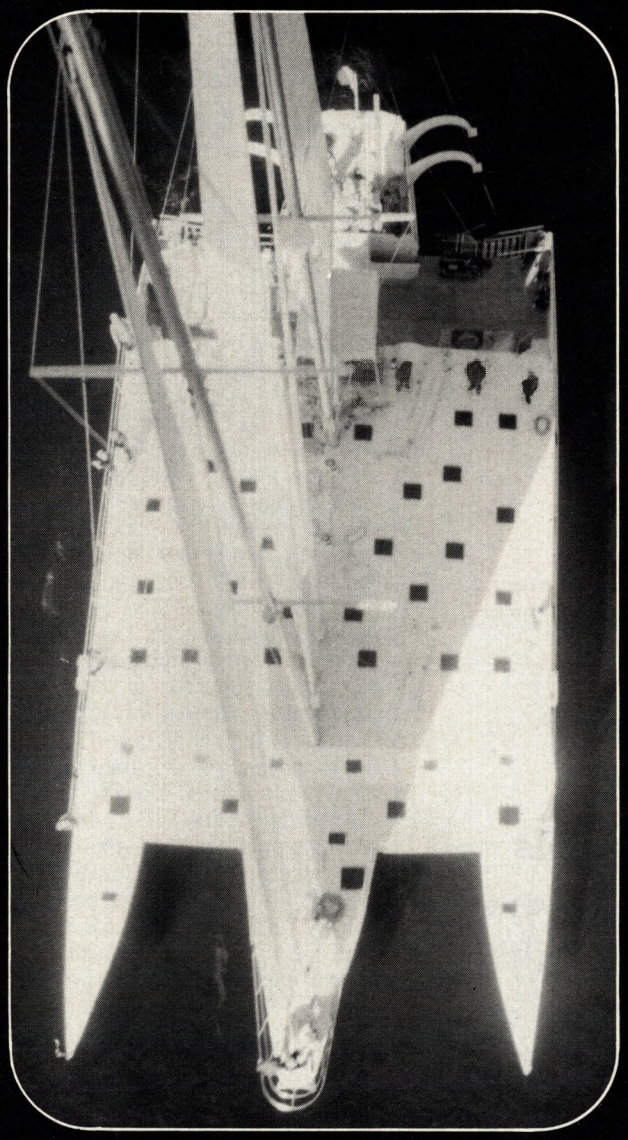
In August, excavation began and gold deposits were located. Recovery continued through September. During dozens of dives, *Nemo* recovered three tons of gold, which were lifted to the surface.

A completely new technique was used to recover the coins and other artifacts lying on the seabed. According to Barry Schatz, one of the principal directors of the Group, molds about 18 inches square were made and placed over sections of the ocean bottom (or the vessel) containing artifacts. A silicone mix was then sprayed through a nozzle into the mold and allowed to settle. When the mixture hardened, the mold and its contents were raised by the ROV. As many as 200 coins were recovered at one time using this method. Pottery and other fragile material have also reportedly been recovered and are being treated for ultimate delivery to museums. Not only does this method of salvage prevent loss of small artifacts but it also prevents any movement that can scratch or damage delicate objects.

Private mints (called pioneer mints) were set up in California prior to the establishment of a U.S. mint in San Francis-

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SS CENTRAL AMERICA

co in 1854. At least 11 types of coins recovered are from these pioneer mints. These coins (hundreds of them were brought up) could have values ranging from $250 to as much as $20,000 each; perhaps more for a few extremely rare coins in mint condition. Some of the gold



THE *S.S. CENTRAL AMERICA* PROJECT

coins were produced by a company well known to the jeans wearers of today. Levi Strauss, a humble Bavarian dry goods dealer, sailed from New York to California in 1850 with several bolts of cloth. He sold most of his stock to passengers enroute but he arrived in San Francisco with one bolt of light canvas. When he went ashore he met a miner for whom he designed and made a pair of canvas trousers—Levi and Company was in business making pants. Shortly thereafter, Levi joined in patenting the use of little copper rivets to reinforce the stress points of the trousers. Levi Strauss, and Levis, were in business to stay. Strauss never did get to the gold fields but his Levis did, by the thousands. By the time the gold fever had completely subsided at the end of the century, Levi Strauss was grossing about $1 million a year in the sale of jeans. Some Strauss pioneer mint coinage was recovered from the *Central America*.

According to the Group, the bullion value of the gold would be about $28 million at today's gold prices. However, much of the gold is in the form of coins and extremely rare bars. The gold bars recovered are marked with an assayer's mark, a serial number and the bar weight in troy ounce; one of these weighed nearly 50 pounds. All of the coins and bars would have far greater value as collector items. Estimates of the total value of the artifacts recovered has gone as high as $1 billion, although one member of the Group suggests a top value of $450 million.

Charles Herdendorf is an Ohio State University oceanographer working with the Columbus-America Group during the exploration of the *Central America*. He believes the researchers discovered two new species of invertebrates clinging to the vessel deep beneath the sea. One of the specimens has been recovered and is being studied. Originally thought to be coral it is now believed it may be a new form of sponge. The second specimen is out of reach of *Nemo*.

As a trained oceanographer, Herdendorf is aware of the advantages of the research tool *Nemo*. Its design, and the many devices for studying and recovering samples of the marine environment

and biota, can provide a better definition of sizes and forms of marine life on the deep ocean bottom. Herdendorf stated, "The fairly lengthy time we can watch the animals' movements helps us to better understand their habits."

Note: Quotes of survivors of the SS Central America *in this article are used by permission from the book* Story of an American Tragedy: Survivors' Accounts of the Sinking of the Steamship Central America. *The book is available from Columbus-America Discovery Group Press, 433 West 6th Avenue, Columbus, Ohio 43201; (614) 299-6000. The price is $10, plus postage.*

KONA AGGRESSOR/ PADI IDC

The *Kona Aggressor* now offers a PADI Instructor Development Course. The PADI IDC will be offered during the week of February 24 to March 3 under the leadership of Bill Hannan, course director. Hannan is a Maui resident with more than 7,000 dives. He freely admits his standards are rigorous because he strives for excellence from his students. He expects the IDC aboard the *Kona Aggressor* to offer optimal education for the aspiring scuba instructor. He feels that the facilities aboard the *Kona Aggressor* are designed specially for divers and that the professional atmosphere will cultivate superior results.

The *Kona Aggressor* is known for the warm, courteous service of her crew, luxurious accommodations and first class cuisine. There will be plenty of time for recreational diving during this very special IDC charter. For more information call the Aggressor office at (800) 348-2628.

SEE AND SEA WHALE WATCHING

See & Sea Travel of San Francisco is offering a schedule of five day whale watching trips at Magdalena Bay on the west coast of Baja California. Whale watching will be from the 68 foot schooner *Elias Mann*, with rides or diving among the whales from a 22 foot boat.

The program includes: first and last nights in Hotel Gran Baja, La Paz; three days and two nights aboard *Elias Mann*; all meals while aboard; round trip vehicle transportation from La Paz to Magdalena Bay; tanks and weights.

The schedule of departures is January 20-24, January 23-27, January 26-30, January 29-February 2, February 1-5, February 4-8, February 7-11 and February 10-14.

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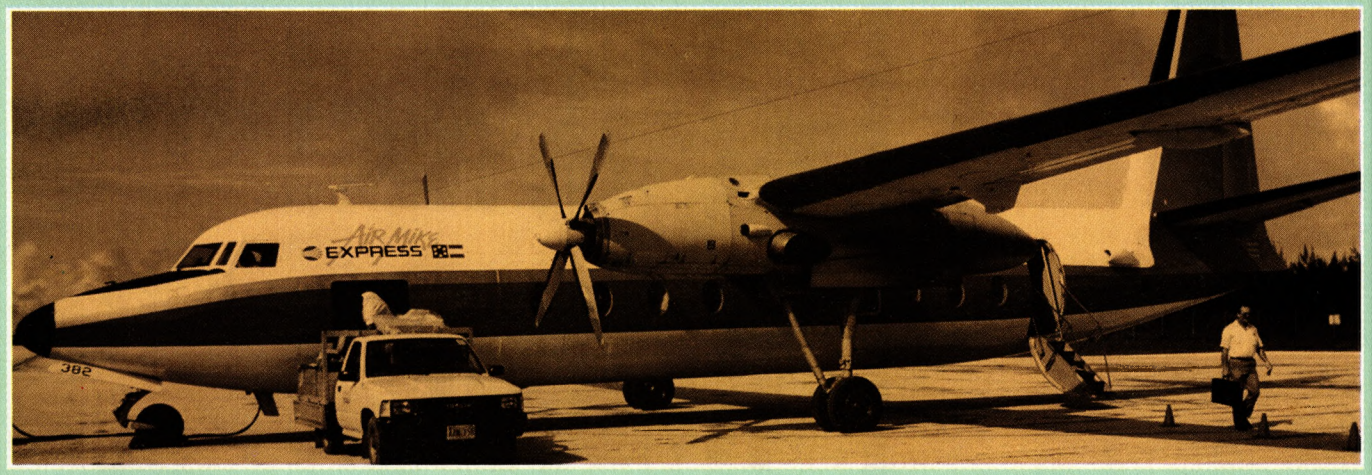


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AIR MIKE EXPRESS

TEXT AND PHOTOGRAPHY BY GERI MURPHY

Continental Air Micronesia recently opened the island of Rota to diving by providing convenient, reasonably priced commuter service from its Guam hub to this little known diver's paradise. Known as Air Mike Express, the new commuter service allows divers to make a direct, same day flight from the U.S. mainland to Rota with intermediate stops at Honolulu and Guam.

AIR MIKE EXPRESS

Continental Air Micronesia recently purchased a fleet of F-27 turbo-prop aircraft specifically for this new commuter service. This high winged aircraft can carry up to 35 passengers plus luggage. The F-27s are fully air-conditioned, equipped with comfortable seating and full toilet facilities.

ROTA SERVICE

Continental Air Micronesia has scheduled three flights daily from Guam to Rota, with departures in the early morning, midday and late afternoon. Flight time is approximately 25 minutes.

The late afternoon flight leaves Guam at 6:00 pm, thus allowing one hour and 25 minutes for connection with the incoming international flight from Honolulu. This direct connection eliminates an overnight stay in Guam and the need to go through Guam immigration and customs.

The same type of convenient connection can be accomplished on the return flight by departing Rota at midday and connecting with the international flight that departs for Honolulu at 6:30 pm.

The frequency of commuter flights also allows direct connection flights to other Micronesian islands such as Saipan, Palau and Truk.

The new Air Mike commuter service is attractively priced at $51 for a one-way ticket or $94 round trip.

Two of the three scheduled daily flights to Rota continue on to Saipan. Flight time between Rota and Saipan is a brief 30 minutes. The addition of Air Mike Express now brings the total number of Guam/Saipan flights up to six per day.

ROTA

Rota has been one of the best kept secrets in Micronesia for the past 20 years. Although it is only 40 miles north of Guam, this island remained obscure because of the lack of daily air service.

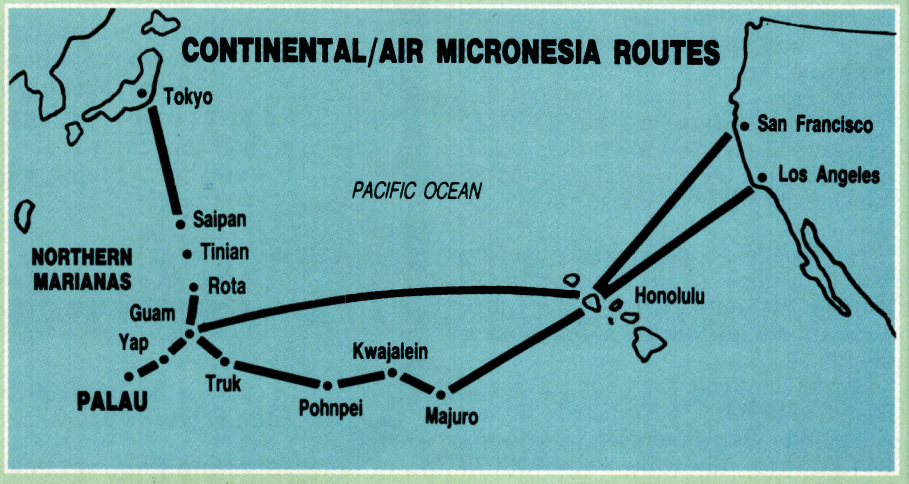
Today, Rota is emerging as a new and exciting dive vacation destination. It is regarded as one of the most beautiful islands in Micronesia because of its high mountains and tropical scenery. It also possesses possibly the clearest water in this part of the world. Underwater visibility often reaches 200 feet.

Rota diving is entirely different than that of either Truk or Palau. This is a singular island, ringed by a magnificent fringing reef. The island offers an excellent opportunity for spectacular wall diving and underwater photography. Rota also has several World War II Japanese ship-

(Continued on Page 126)



Top: An Air Mike Express 35 passenger commuter plane at Rota airport. Right: A Dive Rota McKee Craft boat. Below: Continental flies DC-10s from Honolulu to Guam. You then board an F-27 turbo-prop for the flight from Guam to Rota.





Left: Wedding Cake Wall. Above: F-27 luggage loading door.





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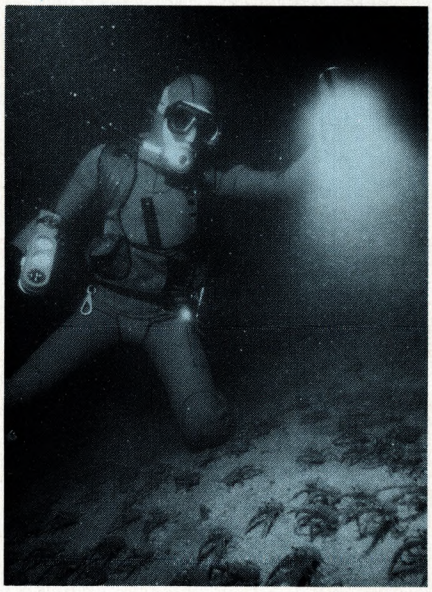
BY JEANNE BEAR SLEEPER

Looking for a cheap thrill? A nighttime high? An exotic adventure without a day on an airplane? Then plunge into the mystery of doing it in the dark—night diving. Under the cloak of darkness even the most seasoned scuba diver will experience the thrill of the unknown, the rush of adrenaline and the excitement of seeing mesmerized life on a reef. Diving after sunset extends the number of hours per day you can participate in the sport. The benefits of night diving are what prod the otherwise wary into giving it a try.

Game hunters know that darkness initiates the feeding cycle of many creatures. Lobsters are out of their holes, walking around foraging. Abalone slide off their scars and look for tasty kelp fronds to munch on. Nature observers know that parrotfish spin a mucus cocoon and smugly eye you from their protective lodging. You can gently pick the sleeping fish up and pet them! Eels escape their daytime dens and swim freely. Corals extend their polyps in a blaze of color and spectacular shapes. Creatures that seek the daytime cover of the reef will be visible. You'll likely see critters you've never seen before, like giant schools of squid darting about in a mating ritual. Animals you recognize will exhibit new behaviors, such as the kelp forest resident, the señorita fish, that digs itself a nighttime hole in the sand. Darkness focuses a photographer's attention on the small area illuminated by a dive light, showcasing the colorful gems of nature.

For old salts, who haven't felt their pulses quicken from a diving thrill lately, night diving casts a familiar dive site with a new look. A reef that you can "dive blind" suddenly looks different washed by moonglow. Those who like to goof off underwater will have a chance to play with the eerie sparkle of phosphorescence, which can consume a whole dive! As you kick, a stream of twinkling light points flows from your fins. Experiencing phosphorescence has been known to turn into an underwater pantomime, with the mime outlined in pinpoints of nature's glow like Fourth of July sparkler swirls in the dark.





photos/ Marty Snyderman

Above: A diver examines an octopus at night in the Caribbean. Right: A night diver observes tuna crabs on the bottom in Southern California's La Jolla Canyon.

EQUIPMENT CONSIDERATIONS

Preparing for a night dive takes three steps: getting your equiment ready, selecting a site where you have already made daylight dives and becoming mentally comfortable with the activity.

For the most part you will use the same equipment at night that you do during the day. If diving from the shore, you may need supplemental directional lighting to mark the designated exit point. If boat diving, you can use deck lights and/or an anchorline strobe to find home. Let's review equipment that takes on even more importance.

Buoyancy Control at night is especially important to keep from finning close to the bottom and stirring up a silt cloud or floating to the surface. In the dark it is very difficult to maintain direction and depth mid-water, so ascents and descents are usually vertical, then divers swim along the bottom following the topography. Vertical descents in a head-up position make ear clearing easier, especially if you are a little anxious about plunging into the blackness. An anchorline or descent line greatly aids control, but if neither is available, skilled buoyancy control is a must. Whatever type of BC you use should have a low pressure inflator. When holding onto lights and other gear, the last thing you need to do is orally inflate a BC, especially mid-water when your visual orientation is the weakest.

Regulators should include an extra second stage and a pressure gauge. The wrong time to run out of air or try buddy breathing with one second stage is in the dark. A whistle should be attached to your BC in a location that is easy to find by touch. Make sure you can place the whistle in your mouth easily. If you become separated from your buddy plus lose your light, whistling will help you find your buddy—or your buddy find you—on the surface.

Carry a knife on night dives. Stray monofilament line or entanglement are always possibilities and reduced ability to see the problem creates stress. A knife with a sharp edge and a sawtooth edge is suggested. A compass can be invalu-

NIGHT DIVING GUIDELINES

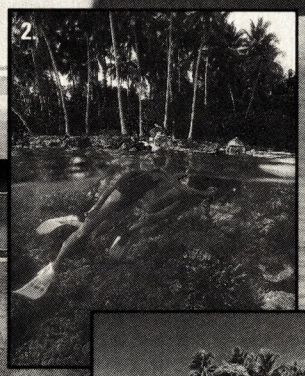
1. Dive in a familiar place.
2. Select a protected site with easy access, shallower depths and a reef formation to follow.
3. Be confident in your diving skills.
4. Be in appropriate physical condition for the dive, including free of the influence of drugs or alcohol.
5. Know you are not claustrophobic.
6. Select and use appropriate primary and secondary lights.
7. Pre-check your equipment in a well lit place and assemble as much as possible in advance.
8. Mark your exit point, whether a boat or on shore, with a very reliable light source.
9. Dive with a buddy.
10. Notify a nondiver of your intended dive time, place and activity. Let this nondiver know when your dive is over as soon as possible.

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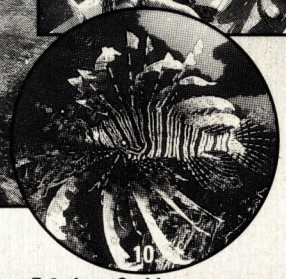
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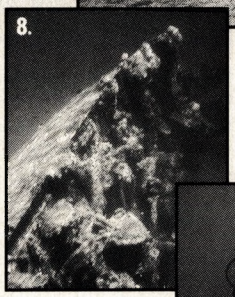
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6.



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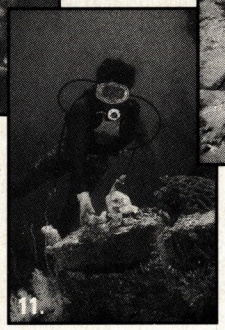


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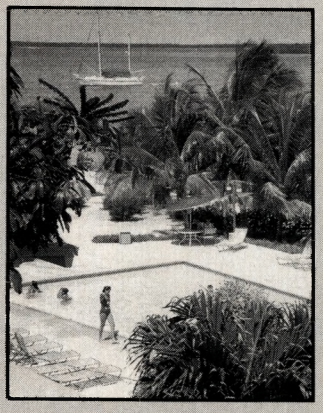


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able at night. Many of the natural navigation clues we use during the day are hard to detect at night, so a compass can provide the shortest route to the shore or boat. Be sure your compass glows in the dark because it takes a Houdini to hold a compass in position, shine a light on the dial and swim at the same time.

"Select and use appropriate ... lights."

Gloves are extra important as you are more likely to bump into things at night. Critters such as urchins are crawling around on the tops of rocks in the dark and gloves save your hands from lots of abuse. Wetsuits may be needed for thermal and abrasion protection. Even in tropical waters, consider wearing a Lycra bodysuit to protect you should you brush up against corals or encounter floating organisms that may be irritating to bare skin. A diver who wears a bodysuit day diving and comes up with few or no marks from marine life contacts will be amazed when he/she completes a night dive and sees the "hits" on his/her suit.

Lights are critical pieces of equipment. The number of different styles, sizes and prices on the market can be confusing. One way to reduce the confusion is to accept that each style of light has a best use, but no light is truly all purpose. Night divers should carry two light sources per person. That means a buddy team would have to be cursed four times before it is completely without artificial light! Primary lights are your longest lasting, heavy duty units. Secondary lights are specialized models, usually smaller, less illuminating and with a shorter burn life.

Primary lights can be battery operated or rechargeable, it's your choice. A rechargeable light is typically more expensive to purchase and less expensive to operate. A battery operated light is less expensive to buy and more expensive to operate as you will likely replace the batteries before every dive. Check the battery lifetime projection versus the charge lifetime when comparing lights. If rechargeable, how long does fully charging them take? Are the answers to these questions compatible with your anticipated dive plans?

The water conditions where you plan to dive will affect the beam angle preferred. A narrow, focused beam throws light the longest distance. If you dive in clear, calm water a narrow beam lets you see the farthest. If visibility is limited, a narrowly focused beam's effectiveness is reduced by the suspended matter in the water. A wider angle beam lights a broader area for a shorter distance. If you

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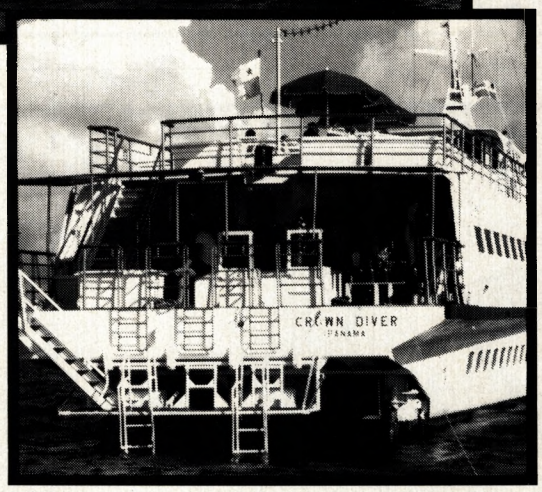
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regularly dive in 20 foot visibility, it is probably preferable to use a light that matches your side-to-side field of vision.

Secondary lights are for spotlight use and as backups to the primary light source. These are typically smaller and often flashlight style.

Chemical lights are inexpensive, plastic tubes that are bent to break the internal compartments and mix chemicals that glow a distinctive green for several hours. Most dive captains require you to tie a chem light to your tank valve when you go night diving. Variations include taping the light on BC hoses or snorkels.

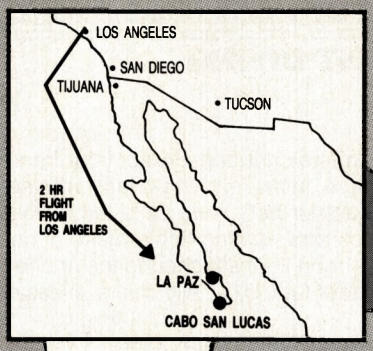
Experienced divers on moonlit nights enjoy the very special wonderment that comes from entering the water, settling on the bottom, initiating a chem light, turning off the big lights and thrilling to the eerie glow of the reef.

"Pre-check your equipment in a well lit place ..."

Lights float or sink, I know of none that is truly neutrally buoyant. Depending on the activities you plan, either style can be appropriate. Do you want to put the light down to grab bugs? Do you want the light to float overhead when you let go of it to take a picture? Do you plan to attach the light to a camera system? (A buoyant light can make it very difficult to hold a camera steady.) Do you plan to night snorkel and want your light to float if it is dropped? Are you sensitive about having more positive or negative buoyancy?

Other features of lights that will affect your purchase decision are durability, ease of grip, switch reliability and lanyard. Lights get knocked around and need to be rugged. Any part that unscrews needs to have an O-ring that is easy to remove and lubricate, deep threads and a solid feeling when it is assembled. Charging plug caps should be textured and big enough so you can get a good grip on them. What kind of gloves do you plan to wear? Obviously, a two-finger mitt and a garden glove have different gripping abilities. You need to be able to hold and operate your light with one hand. The switch needs to stay in whatever position you place it. You don't want it to get turned on accidentally in your dive bag. And, you don't want it to get bumped off unexpectedly underwater. The switch also needs to be reasonably easy to operate with one hand. Lastly, the light should have an adjustable lanyard made of a stretchy material. The stretch is important so if the light gets wedged in a crevice and you can't use the adjustment device to make it bigger,

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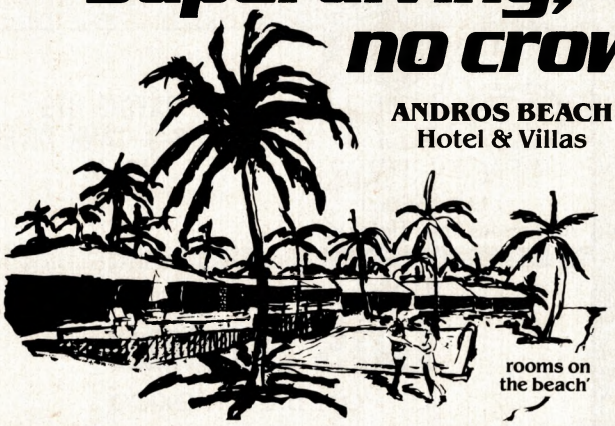
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you can stretch it and extract your hand.

Surface lights are important whether you beach or boat dive. On a large boat, the deck and running lights make it visible. A strobe light attached to the anchorline a few feet U/W will make it easier to find.

When diving from the shore, it can be important to mark your entry point to assure you can find the same place when exiting. The most effective shore lights are permanent and placed so they can be lined up as range markers. Experienced night divers have horror stories to tell about porch lights that got turned off, car headlights that killed the battery, bonfires doused by the fire department and portable lights that got stolen, leaving the night divers to uncertain exits.

The lessons to be learned are:

1) Shore lights, if portable, need to be tended by a beachmaster.

2) Shore lights need to obey local ordinances, which may include no open fires and no strobe lights.

3) Shore lights should not imitate Coast Guard aids to navigation—that is, any array of white, green or red.

4) Shore lights need to be guaranteed to stay turned on.

If you use portable shore lights, consider a Coleman-style lantern with a yellow-tinted glass globe, a battery operated fluorescent lamp with yellow cellophane over the lens or a small strobe.

"Mark your exit point ... with a very reliable light source."

Range lights are any two lights you can line up, thus knowing you are in the right position relative to the lights. If a shore exit area is a narrow space between rocks, it is important the lights line up vertically, or depending on your distance from the light, one light directly on top of the other. If the lights appear side-by-side or diagonal, they are off to one side from where you want to be positioned to exit. These skills are the same ones you use during the day to line up markings and triangulate an offshore position. The difference is you only need two lights to navigate back to shore versus three lineups to fix a location away from shore, i.e. a reef location.

LIGHT TECHNIQUES

Once your eyes get accustomed to the dark, a light shined in your face blinds you immediately and plays havoc with your night vision for quite awhile. *On shore or underwater, never shine a light in a diver's eyes.* Aim for mid-body, if you need to light your buddy.

When giving or answering hand signals, light your hands as you make the signal. Your buddy can be in the dark and see your signals this way.

Signals can be given with the light as well. Since these are not as universal as hand signals, review the signals and their meaning before each dive. Typical light signals are:

1) A circular motion means OK.

2) A back and forth sideways motion means look at me.

3) An up and down motion indicates distress.

OTHER TIPS

Fumbling around in the dark with your equipment is a problem. Before you leave home or when you are in a well lit place, check your gear to be certain it is as together as possible. Check to make sure your snorkel is attached to your mask. Are mask, fin, BC and weightbelt straps adjusted to the right size? Are your whistle and chem light attached? Is the proper amount of lead on the belt? This author attempted an in-the-dark field replacement of a regulator hose many years ago in the era when high and low pressure ports were the same size. I screwed a low pressure hose into a high pressure port. That was an adrenaline pumper for 10 seconds, ended the night's lobster dive, cost $30 and made me feel like a rookie.

"Dive with a buddy."

Don't take things you don't need and dress and undress out of/into your dive bag. In the dark it is so easy to lose small items on the beach. One of the best times to go beach scavenging is the morning after the opening night of California lobster season. This year's treasures included a mask, a pair of fins, a compass and a light—all from one popular beach!

Know your buddy's equipment operation before the pre-entry beach gear check. In the dark it is hard to learn how to operate a new BC. Knowing your buddy's gear is the first step. The second extra important step is the buddy check. Be sure everything is in its place and hooked up correctly. Review the dive profile, U/W light signals and plans for finding your buddy should you become separated.

Being a good buddy on a night dive takes an extra commitment. It is important in reduced visibility situations for buddies to maintain their position relative to each other. If you are on the right side of the team, stay on the right. That way your partner can find you with a one way glance. If you become separated from your buddy take immediate steps to re-establish contact. It is not appropriate to merely hope he/she will reappear in a few minutes. Point your primary light outward and make a slow 360 degree turn in a vertical position. Look for movement,

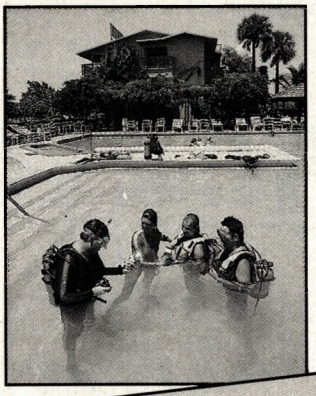
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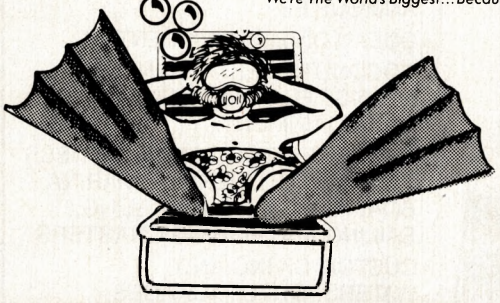
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bubbles and light. If that doesn't locate your buddy, then look overhead and below you with the same 360 degree turning. Do *not* turn off your own light, as that may be how the other diver finds you. Remember, it is a matter of perspective as to which one of you is lost. If turning and looking isn't successful, then slowly ascend to the surface, shine your light so it skims over the surface and turn 360 degrees again. Give loud blasts on your whistle. When you spot the other diver give a circular OK signal with your light and start swimming toward him/her. When reunited, discuss whether to continue the dive and, if you do, descend together, feet first, facing each other.

Plan to stay in a smaller area than you otherwise might. Begin your dive by swimming into the current so you get the free ride back at the end of the dive when you are fatigued.

Night dive sites are more fun and safer if they are protected from surf, extreme tidal changes, surge and currents. A protected bay, cove or reef will maximize your enjoyment. Confidence in your diving skills is another key to enjoyable night diving. Operating equipment, breathing calmly, navigating and exploring the unknown need to be "automatics" so the major difference is merely the darkness. Night divers cannot be claustrophobic. Beginning divers can enjoy night diving as much as advanced divers by being a little better prepared, selecting easier sites, considering boat diving and going with a more experienced buddy.

If you are ready for an adventure, a new look at a familiar dive site, a little mystery and a source of great memories, consider trying night diving. You'll never forget the thrill.

DATELINE MICRONESIA

(Continued from Page 116)

wrecks, including the 395 foot long freighter ***Shoun Maru***—one of the clearest shipwreck dives in Micronesia.

At present, Rota has two dive operations and two resort hotels. The Rota Pau-Pau Hotel is the largest, with 50 air-conditioned rooms set on a hillside overlooking the bay. The Pau-Pau has its own dive facilities, including 54 aluminum tanks, an air compressor and a 25 foot flattop boat that can carry up to 14 divers. The Pau-Pau also operates its own deep submersible that can make dives to 330 feet.

The other resort is the Rota Coconut Village, a secluded 20 room hotel consisting of private bungalows tucked away in the shade of an old plantation.

Dive Rota is an independent operation that services guests from both hotels as well as visitors making a one day excursion of the island. Owned and operated

by an American couple, Mark and Lynn Michael, this dive operation has a spacious retail sales area, more than 35 rental tanks, an air compressor and a new dive boat. Dive Rota is conveniently located across the road from East Harbor marina and very close to Rota's shipwrecks and best dive sites.

OTHER DIVE SITES

In addition to Rota's spectacular *Shoun Maru*, there are many other dive sites within a two mile radius of the boat dock. Three smaller wrecks have been found in the same bay. They are wooden hulled Japanese submarine chasers, complete with depth charges.

Rota offers good wall diving at the outer points of the bay. At **Wedding Cake Wall**, the reef begins at 50 feet and plummets vertically to 300. An even more spectacular site is **Rota Grotto**, a giant underwater cave that opens onto a sheer vertical wall. The cave entrance begins at a depth of 40 feet and the opening is an awesome 80 feet wide and 60 feet high. Once inside, divers can swim to the surface and explore an above water portion of the grotto. A hole in the roof of the cave allows sunlight to illuminate the interior of this fascinating natural phenomenon. At **Ponya Point Wall**, the wall starts at 40 feet and drops to a flat terrace at 90 and then makes a second vertical drop to 200 feet. Small crevices along the face of this wall are occupied by lionfish and other lovely creatures.

In addition to the wrecks and vertical walls, Rota offers excellent shallow coral reef diving at such locations as **Cable Run**, **Coral Gardens**, **Big Table** and **Sand Flats**. These sites range from 20 to 50 feet deep and the bottom is carpeted with tightly packed corals and fascinating Pacific marine life. A diver could spend an entire week diving Rota's underwater attractions and never see the same site twice.

INFORMATION

For more information and brochures on diving and vacation opportunities in Rota, contact the following:

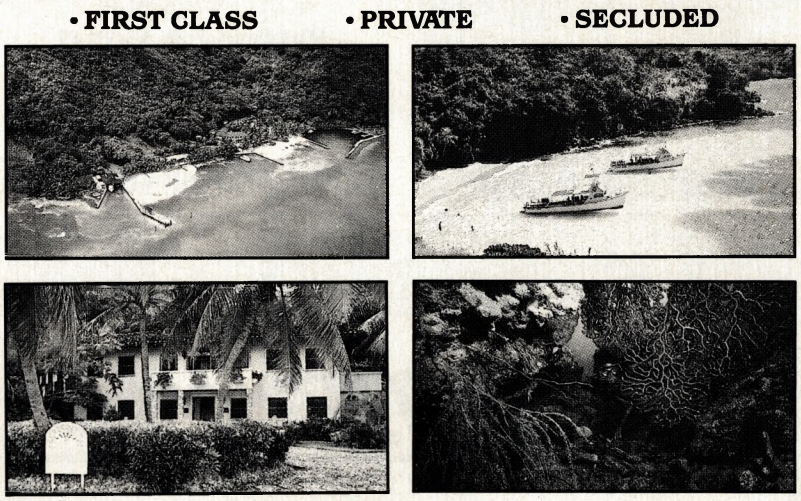
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Saipan, MP 96950
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Dive Rota
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Rota, MP 96951
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Rota Coconut Village Hotel
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COSTA RICA

(Continued from Page 103)

dive area selected is on the southern side, starting at a 70 foot bottom along a rocky shelf. The boat drops you off and stands by for a later pick up, a procedure often indicated in the Costa Rica Pacific offshore arena. Clusters of Pacific angelfish immediately come into view, followed by a close look at the rock face revealing many spotted and green morays. The bottom is adorned with a variety of colorful and craggy fans, whips and encrustations. Even close to shore there are nearly constant encounters with great schools of grunts and snappers that will, at times, eclipse the sun. A very interesting find were several "sleeping" whitetip reef sharks lying dormant in a cave. Other interesting critters include octopus, lobsters, a variety of nudibranchs, large, flower-like anemones and the gaily colored clown shrimp. On a larger scale, giant jewfish, huge manta rays and free-swimming sharks are occasionally seen. During the next several days we explored a dozen sites close to Condovac and north to the Bat Islands. The profusion of marine life continued without interruption.

Our next stop was again revealed by the morning sun: a spectacular hillside cove, punctuated with a crescent shaped bay encircled by dark brown volcanic sand. In the bay is a fleet of diving and fishing boats, behind are the green, mist-shrouded mountains of Costa Rica.

El Ocotal is a pleasant hideaway consisting of a main building with restaurant and bar and a 10 room lodge on the top of a hill overlooking the Pacific. Fourteen private villas are staggered down the hillside. All rooms have air-conditioning, refrigerator, two queen beds, satellite TV and telephone. There is a pool and tennis court on the property. There is a pleasant fishing village, Playa del CoCo, a short distance away.

A walking path or a paved road leads to the beach, where we met Mario Vargas. Mario, the manager of Diving Safaris, is generally considered to be the most experienced divemaster in Costa Rica. The shop, on the beach, has two compressors and 15 full sets of rental gear. Three mid-sized dive boats are anchored just offshore. From the resort cove, it is a short (20 minutes) run to the **Catalina Islands**, a dozen or so huge rocky pinnacles that provide a major dive area. One dive close to the larger pinnacle produced encounters with white-tipped sharks, incredible schools of grunts, a squadron of eagle rays and a large hawksbill turtle. When we had a chance to catch our breaths, we discovered black coral shrubs harboring long-necked hawkfish along the rocky walls. This is a good place to expect numerous schools of pelagic fish such as Pacific barracuda and amberjack.

Later in the week we headed once again to the Bat Islands (El Ocotal and Condovac dive areas overlap) about a 45 minute run away. The islands rise in a series of humps, like the plates along the back of a huge dinosaur. Undersea, the display of schooling fish is mesmerizing, a constant head snapping reaction to the "what's-coming-at-you-next" syndrome.

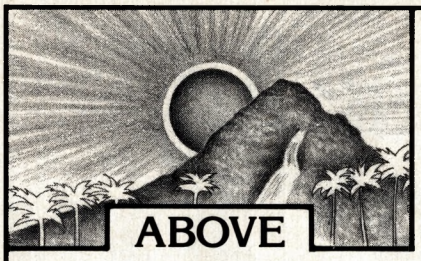
At a site called **Amberjack Place**, close to **Isla San Pedrito**, we found schools of huge amberjack, schools of passer (king) angelfish and schools of Pacific surgeonfish. At another spot, called **Black Coral**, on the inside of **Isla San Jose**, was a virtual garden of bushy corals of several varieties, suggested by beautiful pastel colors of pink, peach and mauve. Others were a perfect white or a jet black and many were five feet tall.

The final dive in the Bat Islands was at a site appropriately called the **Big Scare**. Along the island farthest offshore is a rocky ledge that descends in steps from 20 to 120 feet deep. Offshore is a fisherman's alley, a deepsea environment where the great sportfishing boats roam, trolling for giant marlin and tuna. There are schools of various tropical fishes and pelagics ad infinitum, but it is the anticipated encounter with one or more of the "big boys" that is the attraction here. Without disturbing the flowing schools of fish, they appeared—four huge bull sharks—swimming a short distance away. The animals, who appeared to be in excess of nine feet long, swam along slowly, noses close to the bottom. Seldom coming very close, they nevertheless appeared unruffled by a cameraman who tried his best not to get in the way. After this Costa Rica encounter, I concluded you never really get used to the big ones.

For the next series of dive adventures we headed for the southern Pacific coast, flying a small plane into an airstrip at Palma Sur. If there was any doubt we were dive pioneers, it was now erased in a series of excursions, 20 miles down a cobblestone road via van and then a 10 mile journey down the Rio Sierpe by small boat down to an opening on the coast. Howler monkeys laughed and cried to us from overhanging trees and squadrons of red macaws flew overhead.

At the Phantom Isle Lodge at Drake's Bay, we found pleasant accommodations in the form of a jungle mainhouse with restaurant and bar and 10 rooms, each with twin beds and a shower. There is a one compressor, 45 tank dive operation attached to the lodge and it utilizes two twin outboard boats. Our divemaster and boat captain, Raphael Gonzalez, was friendly and very knowledgeable about local waters.

The best diving along the southern Pacific coast is farther offshore owing to the outflow of many rivers along the wet, tropical coast. **Cano Island** is the legendary isle where Sir Francis Drake is



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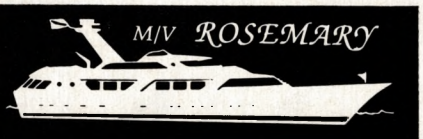
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COSTA RICA

said to have hidden considerable treasure. It is surrounded by good potential diving. Perhaps the highlight dive site is the wall, a nearly vertical rocky shelf where parades of pelagic fish, as well as giant manta rays, roam. During our short visit, underwater visibility was seriously reduced by a heavy rainy season. This is perhaps an indication that dive trips should be planned here between November and May.

Our final adventure was at the Marenco Biological Station, a small grouping of natural wood lodges on a hill overlooking the sea. There is an open air restaurant and bar and eight rooms with double bunkbeds and a shared bath/shower room. The emphasis here is on education and discovery with professional seminars in biology and botany offered regularly.

There is a small modern dive operation, but we were running short on time. We elected instead to visit the fringe of the Corcovado State Park, the last remaining virgin rainforest in all of Central America. In addition to a myriad of bird, mammal and plant life, we discovered a spectacular jungle waterfall. That afternoon we concluded our Costa Rica sampler with a horseback ride on a deserted volcanic beach.

A week in Costa Rica is a teaser. The diving and the topside exploration are worthy of more time and continued visits. Without crowds and with adequate support, divers will find a world below that is simply unavailable in all but a few wilderness areas. Our next visit will include an outing aboard the *Okeanos Aggressor* to Cocos Island, perhaps the ultimate Costa Rica underwater adventure. When many Caribbean memories fade away, I will still remember Costa Rica.

U.S. citizens entering Costa Rica are required to have proof of citizenship and a tourist card, which can be obtained at the airline counter. LACSA is the national airline of Costa Rica, with regular flights from Miami, New Orleans, Los Angeles and New York.

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DIVER'S HOTEL ON YAP

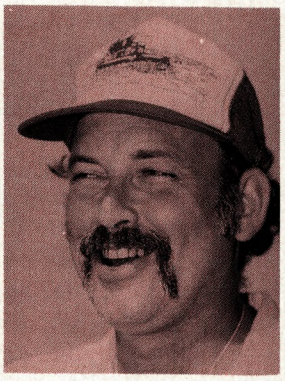
TEXT AND PHOTOGRAPHY BY GERI MURPHY

Bill Acker, general manager of Yap Divers, reports that ground was recently broken for construction of a brand new diver's hotel on the island of Yap, Micronesia. The new resort facility is being built by Waab Transportation, parent company of Yap Divers.

Designed specifically for visiting divers, the new hotel has been named Manta Ray Bay Hotel, in honor of the remarkable abundance of manta rays in the waters surrounding Yap. The new hotel is harborside in the central district of Colonia, the capital of Yap.

The new hotel will contain a total of 15 air-conditioned rooms. Ground floor units will have two queen sized waterbeds, while rooms on the top two floors will be furnished with standard queen sized beds. Each room will be furnished with color TV, VCR and a mini-bar. The hotel will have one executive suite that can accommodate four persons and will have its own spa. Plans for the hotel were drawn by the architect who designed the Palau Pacific Resort in nearby Koror.

Bill Acker



The 38 foot *Popou* can carry 25 divers.



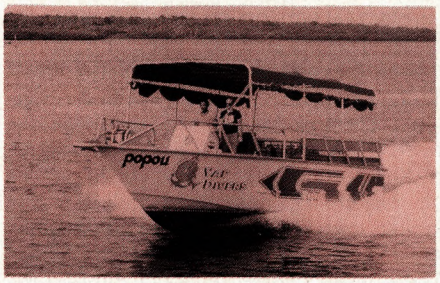
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In addition to stylish room accommodations, the new Manta Ray Bay Hotel will contain a terrace restaurant on the top floor. The menu will feature American, international and local cuisine, with the emphasis on seafood. Adjacent to the restaurant will be a cocktail lounge known as the Slack Tide Saloon.

Also on the hotel grounds is Yap Divers, complete with a retail sales area, equipment rental department, repair department and guest gear storage area. Moored directly in front of the dive center and hotel is Yap Divers' *Popou*—a 38 foot, high speed, aluminum vessel believed to be the finest dive boat in Micronesia. The *Popou* can carry up to 20 divers and cruise at 25 knots. The vessel is equipped with a 20 foot long canvas canopy for shade, a 75 gallon freshwater rinse tank, a 12 foot wide stern platform and stereo sound system.



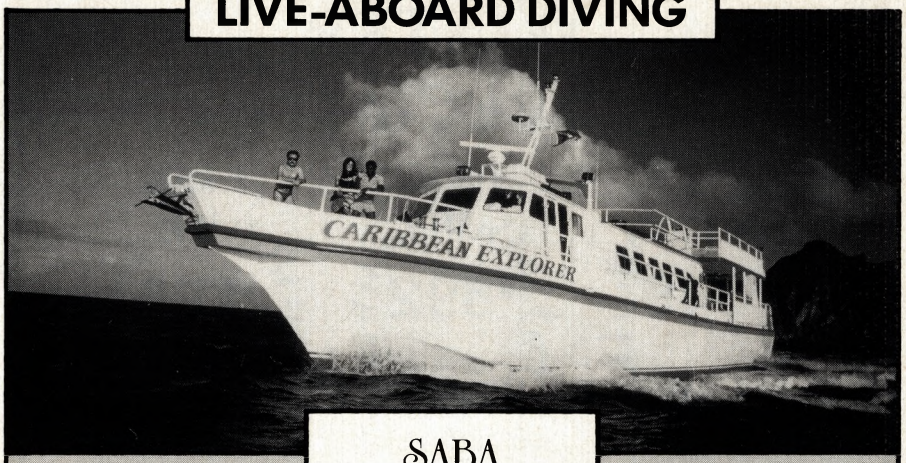
The *Popou* cruises at a fast 20 knots.

Five hundred and fourteen miles southwest of Guam, the island of Yap offers visitors a unique cultural experience. It is the home of the legendary stone money, one of the most valuable and unique forms of currency in the world today. Yap's 6,500 inhabitants have managed to preserve their culture and still perform ritualistic stick dances that are more than 1,000 years old.

Up until two years ago, Yap had been an obscure and unknown destination for divers. The advent of Yap Divers opened this island's magnificent reefs to the outside world. Yap gained worldwide fame this past year with the discovery of a family of 15 manta rays that lives in one of the island's coral channels. The mantas appear at this one location on a regular and consistent basis and show no fear of divers. They can be observed and photographed very close. In addition to the manta rays, Yap offers an excellent array of wall dives, coral caverns and drop-offs of every description. Underwater visibility on the outside of the reef ranges from 100 to 150 feet.

Manta Ray Bay hotel is scheduled to open March 1 and room rates will be approximately $95 per day. Reservations can be made through specialty dive travel agents or by contacting Yap Divers, P.O. Box 177, Yap, W.C.I. 96943 or by telephone at (691) 350-2301. Continental Air Micronesia operates 727 nonstop jet service from Guam to Yap three times weekly.

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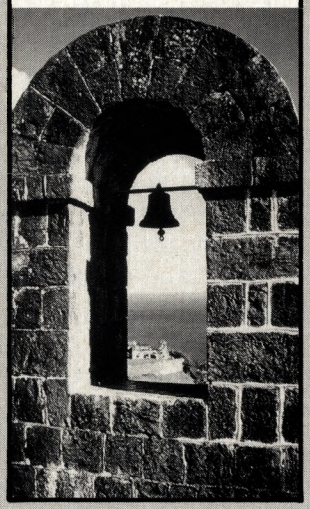


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THE VALIANT

(Continued from Page 19)

should be right below.

No matter how you decide to dive the wreck, permission of the Avalon harbormaster is required. Contact him by marine radio as you approach Avalon or visit him on the Green Pleasure Pier.

The *Valiant* lies upright in 90 feet of water, parallel to the shore, with what is left of the deck at about 60 feet. The bow faces northwest—right into the current. The sand slopes gently upward on the port side of the ship to about 30 feet, where it levels off.

After 60 years on the bottom, many salvage attempts and the penchant wreck divers have of taking souvenirs, there isn't a whole lot left of the *Valiant*. She still looks like a wreck, but this won't last forever. Boat anchors have been known to pull off parts of her hull and she is generally in a state of decay. Her midships collapsed upon itself some time ago but the stern and bow remain recognizable. There is no danger of being trapped inside because there are no enclosed areas. The anchor chain locker still has a ladder leading up to an open hatch on the deck, but this is open on one side.

Why dive the *Valiant*? Although lobsters have been found hiding in parts of the wreck, the main reason people dive the *Valiant* is to experience a wreck in easy diving conditions. Since the *Valiant* lies on the leeside of Catalina, she is divable when other Southern California spots are blown out. The surface is generally calm and I have never experienced any surge. A mild current often runs from bow to stern but swimming toward shore removes one from it. Since boats generally anchor right in the wreck, ascents and descents are extremely easy and the anchorline is available for safety decompression stops.

M/Y VALIANT SPECIFICATIONS

Date/place launched	March 20, 1926 Newport News, VA
Date/place sunk	December 17, 1930 Santa Catalina Island, CA
Length	162'3"
Beam	26'
Gross tonnage	444
Engines	2, Winton 950 hp diesels
Cruising speed	16 knots
Cruising range	5,500 miles
Hull material	Steel
Cost when built	$750,000

The reason I dive the *Valiant* is simple: It is very photogenic. Schools of blacksmith hover over it while bright orange Garibaldi and red sheephead dart about, peering curiously through empty portholes at divers. Red, yellow and brown seafans decorate many parts of the wreck. Macro life abounds. There are lightbulb tunicates, purple hinged scal-

lops, *Corynactis* anemones, feather-duster and Christmas tree worms, solitary cup corals, nudibranchs and other small animals covering every square inch of the hull. Chestnut cowries found here have red tinged shells from absorbing rust.

I have made more dives on the *Valiant* than on any other single Southern California site and each time I see something not seen before. Each visit to this once luxurious yacht is a treat.

Note: Bonnie J. Cardone is co-author, with Patrick Smith, of Shipwrecks of Southern California, *published by Menasha Ridge Press last November.*

DIVI FLAMINGO BEACH HANDICAPPED PROGRAMS

Handicaps as severe as total paralysis from the neck down need not constitute a disability, according to guests and staff at the Divi Flamingo Beach Resort and Casino on Bonaire. For Kathy Cleary, a former certified diver who today, as a quadriplegic, maneuvers her wheelchair by blowing into a tube, Divi Flamingo became the setting for a personal victory. Cleary courageously immersed herself into the sea, scuba gear and all, for a 15 minute dive—her first since an accident paralyzed her five years ago.

Cleary was a member of one of two dive groups, each consisting of handicapped and able-bodied divers, that recently visited Divi Flamingo.

Divi first became sensitive to the physically handicapped diver in 1986, when members of the Handicapped Scuba Association from California first visited Divi Flamingo. It was immediately apparent to the Divi staff that the resort's guest rooms and public areas were difficult to access with a wheelchair and that it was impossible for guests relying on these vehicles to move about independently. Divi co-founder Joyce Wiggins led the effort to change that. She and Monte Hollander, then the hotel's general manager, along with the hotel staff and Divi's marketing and sales specialists, sought professional advice on accessibility and began putting their plans into action.

Today, Divi Flamingo Beach Resort and Casino is equipped with ramps to provide easy access to 25 wheelchair accessible rooms, as well as to both restaurants, both bars, both swimming pools, the casino, the boutique, the dive operation and retail shops and Photo Bonaire.

Reservations for Divi Flamingo and Dive Bonaire, as well as additional information on diving for the physically challenged, are available by calling Divi Resorts toll free at (800) 367-3484.

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DIVE BVI

(Continued from Page 73)

by Kendell and Cindy Shewmake, Dive BVI is a full service PADI training facility. For more than 12 years Dive BVI's dedication to the traveling diver has been evident. Each of the 11 instructors and divemasters has more than two years' experience in BVI waters. Each instructor can offer insight on all aspects of diving. In addition to charters, Dive BVI staff members are busy with introductory through open water certifications, including specialty programs such as underwater photography, wreck and night diving.

"Easy diving" is a Dive BVI philosophy. You will never have to carry a gear bag, set up your equipment or clean it. Once you check into the dive center, the staff handles all your gear. It will be set up for the morning dive, tanks changed between dives and, when the day is over, your gear will be washed and stowed until the following day's dive.

Dive BVI maintains an impressive fleet of boats at each of three dive centers. The largest of the boats is the 38 foot Delta cruiser, *Sea Wasp*; the *Sea Cat* is a 35 foot Bruno Stillman lobster boat; the *Sea Horse* is a smaller, 38 foot Dusky open fisherman. Each of the boats carries two instructors and no more than 12 divers. The *Sea Horse* is a six pack. A new, 40 foot Lindsay yacht is presently being custom fitted for diving. Each of the boats features a large swim platform and extended ladder for easy exit, ice coolers and safety equipment.

The main dive facility at the yacht harbor is where you will first meet your hosts, Kendell and Cindy Shewmake. An affable young couple from Colorado, Kendell and Cindy divide their time between the main center and satellite shops at Leverick Bay Resort and Anegada Reefs Hotel. Each of the shops has a full complement of island apparel, colorful T-shirts, swimwear, sunwear and funwear as well as retail scuba equipment.

Dive BVI has made dive vacation packaging even better with special hotel arrangements. At Leverick Bay Resort, each of the 16 air-conditioned oceanfront hillside rooms and four hillside apartments overlooks Virgin Gorda's beautiful North Sound. Spread over several acres with verdant foliage and pink hibiscus, the resort offers complete privacy with extensive facilities.

Leverick Bay Resort and Yacht Club typifies the British Virgin Islands; beautiful, relaxed and private. The resort features a freshwater pool, sandy beachfront, tennis courts and a variety of watersport activities. Within the resort is North/South Yacht Charters. The fleet of sailboats includes sleek, luxurious C & C yachts that allow guests to divide their time between chartering and hotel accommodations.

For guests wishing to charter, Dive BVI offers rendezvous diving. Special arrangements can be made to have one of the Dive BVI boats pick you up from your yacht and return you after the day's dive.

Little Dix Bay curves along a white sand cove protected by a coral reef. The resort offers 102 rooms in a variety of configurations. Cooled by tropical tradewinds, the guest room units are nestled among a dense forest of palm and seagrape trees, tropical plants and flowers.

Little Dix Bay offers the dive traveler a host of other activities. There are seven tennis courts and a pro shop, horseback riding and day sail excursions, deepsea fishing, secluded island picnics and a complimentary water taxi to other islands. The resort offers several watersport activities as well, including snorkeling, windsurfing, sunfish and waterskiing.

Little Dix Bay has two casual restaurants and one formal dining room. And, there is a beachside bar where you can kick back and relax!

Dive BVI also has hotel packaging with Biras Creek, a 32 private suite hotel. More than 100 acres of unspoiled beauty surround a castle-like hotel that's delightfully British and blessedly serene. Other hotels include Drakes Anchorage, on Moskito Island, featuring 10 oceanfront rooms overlooking Gorda Sound. Haitian decor accentuates the tropical feeling. Large groups can rent the entire island, enjoying their own Crusoe style vacation.

The Anegada Reefs Hotel is simply defined: relaxed, informal, friendly and fun. The deluxe, air-conditioned, 12 room hotel overlooks the Caribbean, where the evening ritual includes a romantic sunset. The hotel has quickly become a favorite among lobster lovers. It serves the best lobster in the islands, prepared over an open fire on the beach. Also famous is the Anegada Reefs Hotel Smoothie, a rum drink served at the thatched beach bar. The hotel is quaint and islandish, offering boutique and restaurant service.

Virgin Gorda, the second largest of the islands in the British Virgins, is secluded and unspoiled. For the adventurous, a hike to the ancient ruins of the copper mine or the ethereal caves of The Baths, are musts. A quick trip to the many beaches and coves with mask and fins will prove to be a highlight. Offshore, the underwater seascape mirrors the rugged topside beauty.

Many of the best BVI dive sites are within minutes of the hotel docks. A favorite site called **The Chimney** is on the west side of **Great Dog**. A swim-through tunnel is the highlight and a large forest of elkhorn coral covers the seafloor. On the southeast side of **Ginger Island** is a special place called **Alice in Wonderland**. A mini-wall dive from 40 to about 90 feet, it features large acres of mountainous star coral that resemble the mushroom fields of the children's novel. This site is open to the ocean and a good place to keep an eye to the blue. You never know what might swim by—reef sharks have been observed here as well as stingrays, African pompano and Atlantic spadefish. This past April a 15 foot whale shark was sighted in the area.

Tow Rock is a pinnacle that rises from 80 feet of water to within 15 feet of the surface. Large ledges and coral overhangs with tendrils of soft coral are the prominent features of this site. The area called the **Dog Cays** is a group of uninhabited islets that have the most concentrated variety of corals in the BVIs.

Dive BVI also schedules trips to the famous wreck of the ***Rhone***, featured in the movie *The Deep*, and the wreck of the Korean refrigerator ship, the ***Chikuzen***. The *Chikuzen* now rests in open water on a sandy ocean floor at 80 feet. It attracts a large number of pelagic marine life and has resident southern stingrays.

For more information contact Dive BVI Ltd., P.O. Box 1040, Virgin Gorda, British Virgin Islands or call (809) 495-5513.

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OCEAN SPIRIT CHILDREN'S PROGRAM

Tadpole Aquatics, a special children's cruise program, has been initiated aboard the *Ocean Spirit*, the only pleasure cruise ship in the world to contain a state of the art scuba diving complex and watersports resort on board. Ocean Quest International has created a policy in which children under 12, when accompanied by their parents, will now be able to take the seven day Aquaventure Cruise to Belize for free, not including air fare. The children will be introduced tc water safety techniques and the rudiments of scuba diving.

For information contact 512 South Peters St., New Orleans, LA 70130-1629; (504) 586-8686.

SC TRAVEL/ANDAMAN SEA DIVING

SC Travel Ltd. of Toronto, Ontario and Andaman Sea Diving, headquartered in Calgary, Alberta, Canada have joined forces. The merger will enable SC Travel to market its products extensively in the North American market.

Rick Taman, president of SC Travel Ltd., has been successfully involved in the scuba travel industry for the past 10 years. His knowledge and extensive background from diving all the major areas in the world will enhance the information network currently in place.

President of Andaman Sea Diving, Pedro Van Meurs has been researching and developing new dive destinations such as the Canadian Arctic, offering new and exciting frontiers for the scuba enthusiast, in addition to the portfolio in place in Phuket, Thailand.

Cyndi Rasa has been appointed the international marketing representative for western Canada and the U. S. Additional information may be obtained by contacting SC Travel at #650, 10201 Southport Rd. SW, Calgary, Alberta T2W 4X9, (403) 253-1163, (800) 661-9148 (U.S.); or #202, 115 Danforth Ave., Toronto, Ontario M4K 1N2; (416) 461-2432, (800) 268-6777 (eastern Canada).

BISMARCK FOUND

Not satisfied with finding and studying the wreckage of the *Titanic*, oceanographer Robert D. Ballard recently led an expedition that found the famed World War II German battleship *Bismarck*. The warship was in 16,000 feet of water in a submerged mountain range near 48 degrees north latitude in the Atlantic Ocean. (The exact location will only be revealed to German authorities.) Because the *Bismarck* was in a running battle when she sank and because the British and Ger-

mans did not keep precise records of the sinking, Ballard's expedition had to search 150 square miles of the ocean floor for the wreck, using sonar, remote robot sensors and cameras.

According to Ballard, the *Bismarck* is remarkably well preserved. Although it has lost its gun turrets and was hit by numerous torpedoes, the ship still has touches of freshness, Ballard adds.

Ballard feels the ship was sunk by a combination of deliberate scuttling (to avoid capture) and torpedoes. "So it was on its way down and the torpedoes helped—but it was on its way down," he said. "I'm convinced the British would have sat there and plunked torpedoes into it until it sank. So it's sort of academic who sank it."

Only about 100 of the *Bismarck*'s crew survived, nearly 2,300 perished.

MIAMI VALLEY SCHOOL OF DIVING

Miami Valley School of Diving, a PADI Five Star Instructor Development Center in Centerville, Ohio, now offers U/W photography certification. This specialty will cover all areas of underwater photography including macro, normal lens, close-up and wide angle as well as basic equipment care and maintenance.

Also recently added to the course offerings at MVSD are underwater navigator and boat diver.

MVSD is a complete training facility offering sales, service, rentals and all levels of instruction from open water to IDC, including eight specialties. For more information contact Miami Valley School of Diving, 871 East Franklin Rd. Centerville, Ohio 45459; (513) 434-DIVE.

LAMMER LAW TO THE GALAPAGOS

Trimarine's 95 foot trimaran *Lammer Law* is being relocated to the Galapagos Islands. This is a joint venture with Quasar Nautica, an Ecuadorian yacht charter company with long experience in Galapagos operations. Trimarine will have two of its key people attached to the operation and Duncan Muirhead, the founder and owner of the company since 1971, will be making frequent visits to ensure that Trimarine's high standards are maintained.

Trimarine will be continuing its operation in the British Virgin Islands with *Cuan Law*, the 105 foot sistership to *Lammer Law*. For further information contact Trimarine at its stateside mailing address, P.O. Box 4065, St. Thomas, USVI 00803.

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THE PINTA

(Continued from Page 51)

his speargun in hopes of landing a giant blackfish that would provide him with a few enjoyable feasts. The *Pinta* is harder to spearfish on than many of the more broken up wrecks. The larger fish are very wary and like to keep their distance while staying close to a convenient hiding place. The intact structure of the *Pinta* does not afford the quantity of safe houses available at other sites and makes it difficult for the spearfisherman to sneak up on a fish. Despite the hindrances, Tony's catch was impressive. Alas, that monster black eluded him once more.

PINTA SPECIFICATIONS

Year/place launched	1959 Martenshoek, Denmark
Date/place sunk	May 7, 1963 Five miles east of Elberon, NJ
Length	194′
Beam	31′
Gross tonnage	500
Engine	Diesel oil
Type of vessel	Freighter

Susan Janesko of Neptune City, NJ checked and double checked the controls on her Nikonos V camera as the boat neared its anchorage. Her goal for the dive was to capture the beauty of the frilled anemones that populated the hull of the *Pinta*. It was easy to follow her around in the 30 foot plus visibility but even if the visibility had been poor, the continuous flashing of her strobe as she captured image after image would have revealed her location. She expressed her joy afterward about her encounter with a sea raven, a close cousin of the Caribbean scorpionfish. These mellow fellows can be extremely cooperative, allowing multiple shots with changes of exposure and viewpoint. That day's sea raven was a prize subject.

Dan Kirby from Neptune, NJ was looking for a mussel dinner. Upon reaching the deck of the ship, he made his way forward to one of the two masts that protrude parallel to the sandy bottom. It took less than two minutes to put enough blue mussels in his mesh bag.

The remainder of the divers were divided between sightseeing and lobster hunting. Joe Pakan of Colts Neck, NJ had some favorite spots that had yielded lobsters on previous dives. He was not disappointed; he reboarded the vessel with two, two-pound bugs. The sightseers had a beautiful day. The waters off New Jersey are filled with marine life in late summer and fall. The top of the wreck was alive with schools of smelt, blackfish, seabass, porgies and bergalls. Occasionally, the smelt would dive for the bottom as a passing school of marauding bluefish would try and catch a tasty mor-

HENDERSON UPDATE

Henderson Aquatics has established a Pacific Coast office to provide promotional, merchandising and sales support for that area's retail stores. Carol Hanes has relocated from New Jersey to implement support services in addition to field sales staff activities. The Pacific Coast office has responsibility for the Rocky Mountain Region, the Pacific Northwest, Western U.S. including California, Alaska, Hawaii, Mexico and Central America. Henderson Pacific's telephone number is (415) 389-1216. The fax number is (415) 389-0537.

Additionally, Stella Associates, in Ipswich, Massachusetts handles sales in the Northeast and Middle Atlantic States. Paul Chenevert was recently added to this sales team to strengthen and service the field. His primary responsibility will be merchandising, promotional and sales support for Northeast retail stores. Stella Associates' phone number is (508) 356-7992. The fax number is (508) 356-9607.

Also, Henderson Aquatics has joined forces with the sales organization Flaggship. Sondra Hindelang and Jim Flagg will oversee sales development in the Rocky Mountain Region. Their territory includes Colorado, Western Kansas, Idaho, Montana, Wyoming, North Dakota, South Dakota and Nebraska. To contact Flaggship call Henderson Pacific.

CARIBBEAN EXPOSURES

Larry Salvo, of Sea & Sea underwater cameras, has recently organized a new travel company specializing in underwater photographic tours. Caribbean Exposures will provide package tours throughout the Caribbean, combining underwater photography and underwater photographic instruction. Courses will be taught by some of the best known underwater photographers in the field and feature the newest and latest Sea & Sea underwater systems. Package tours will be available for the basic to the most advanced underwater photographers.

Bookings and information are available through Caribbean Exposures, 3640 North Ocean Drive, Suite 630, Riviera Beach, Florida 33404 or by calling (407) 845-6601.

AQUANAUT EXPLORER/ BELIZE GROUPERS

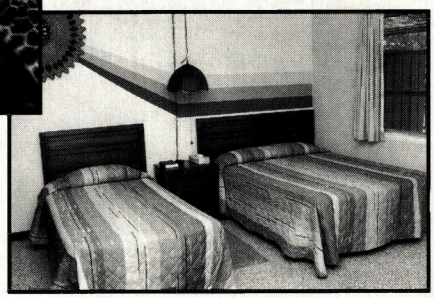
A sensational marine spectacle occurs every year on the third night after the first full moon in January off Belize, Central America: the spawning of giant groupers. Aquanaut Cruise Line's M/S *Aquanaut Explorer* will devote its January 12 cruise to observe this annual phenomenon.

Aquanaut Cruise Line operates dive/cruise ships in the British Virgin Islands, off St. Maarten, Saba and Curacao. For more information call (800) 327-8223 or write to Aquanaut Cruise Line, 241 E. Commercial Blvd., Ft. Lauderdale, FL 33334.



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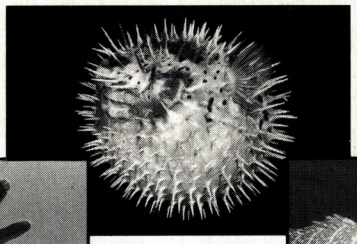
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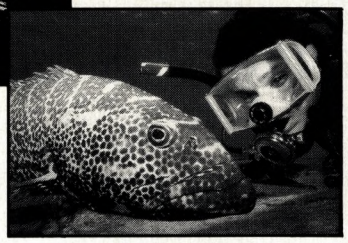
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WRECK FACTS

(Continued from Page 12)

gle. Cargo could be unloaded at 800 tons per hour.

The *Material Service* was self propelled, with twin screws powered by two 350 hp diesel engines. Her maximum speed was 10.5 mph. Her four holds could be loaded via eight 30 x 10 foot subdivided hatches and would carry 2,400 tons of cargo. She was constructed almost entirely of steel.



photos/Richard C. Drew

Wreckage near the ship's A-frame turret.

The *Material Service* supplied gravel and sand for many Chicago buildings, most notably the Merchandise Mart. Her final voyage was on July 28, 1936, her 114th trip. She began loading sand at 12:47 pm and completed loading at 5:15 pm. She departed Lockport at 5:31 pm with a full cargo of 2,400 tons of sand. It was only a few hours from Lockport to the 92nd yard and the A-frame was kept erect. Captain Charles D. Brown was on duty, piloting the *Material Service* toward Calumet Harbor, the entrance to the Calumet River.

The lake began to get choppy just past midnight on the 29th. Water had been splashing over the deck and hold covers for some time. The ship was in no apparent danger, so Captain Brown decided there was no need to make the steel hold covers watertight with tarpaulins. These were kept handy in order to cover 48, eight inch holes that were cut in the hold hatches to speed up loading.

Most of the 22 crew members were asleep in their berths. Below decks, third assistant engineer Joseph Change noticed an unusual amount of water in the bilges. Within five minutes this rose more than two feet.

The three inch and six inch pumps were put into action, but could not keep up with the influx of water. Change went to wake the chief engineer and arrange for the main pump to be utilized (this involved employing one of the ship's engines). He was on his way and the *Material Service* was five minutes from Calumet Harbor when a wave washed over her decks, causing a lurch to port felt

throughout the ship. John M. Johnson, the first mate, reported that Captain Brown stated "Jack, we're going over." The ship jerked upright.

Asleep in his bunk, deckhand Alfred Melby was awakened by a jolt and shouts of "We're sinking!" Melby and six other sailors raced up the ladder leading to the deck. Clutching a lifevest, he was the last to flee. Melby was pulled under by the suction of the sinking ship, the lake "swallowing him up." He credited the lifevest with saving his life.

In the pilothouse, Johnson grabbed the captain's arm to help steady him, but lost his hold. In a pedulum motion, the deck swung almost vertical, starboard and port becoming up and down. Johnson and Brown were thrown into Lake Michigan. In less than a minute the *Material Service* was gone.

The upright A-frame and bow light staff were visible above the surface, mute tombstones of steel that marked the graves of Captain Brown, the chief engineer and 14 others. Many were trapped in their berths or pulled under by suction. Change, Johnson and Melby were among the seven survivors.

Several weeks later, on June 24, a waterlogged lifebuoy from the *Material Service* washed ashore in Sturgeon Bay, Wisconsin, just one mile from the site of the ship's launching. It had traveled more than 250 miles.

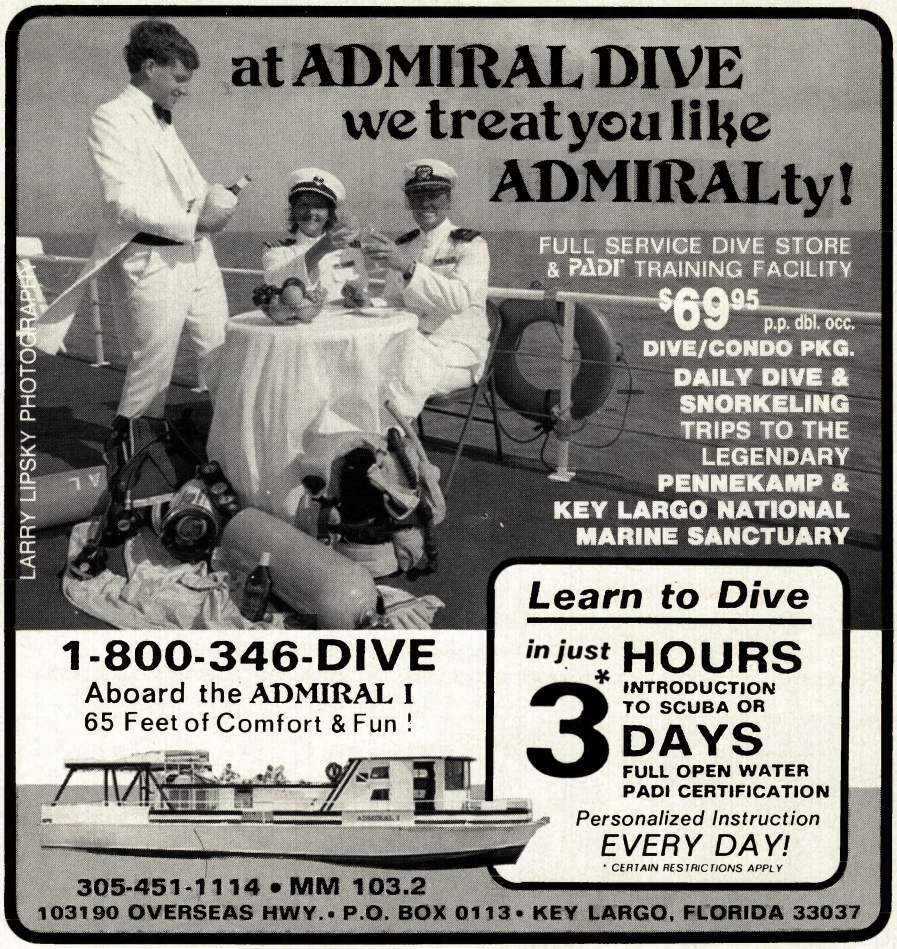
The sinking prompted several inquiries and a lawsuit for the insured value, $200,000. The suit was later dismissed. The disaster was eventually blamed on water entering the holds, and possibly on the erect A-frame making the ship top heavy (the added see-sawing motion could have aided the water entry). Captain Brown was found to be at fault.

The A-frame and light staff were removed a few days after the disaster and the wreck temporarily buoyed. Several attempts at salvage were made over the next decade. Her $200,000 salvage value was a prize for anyone lucky or skilled enough to raise her.

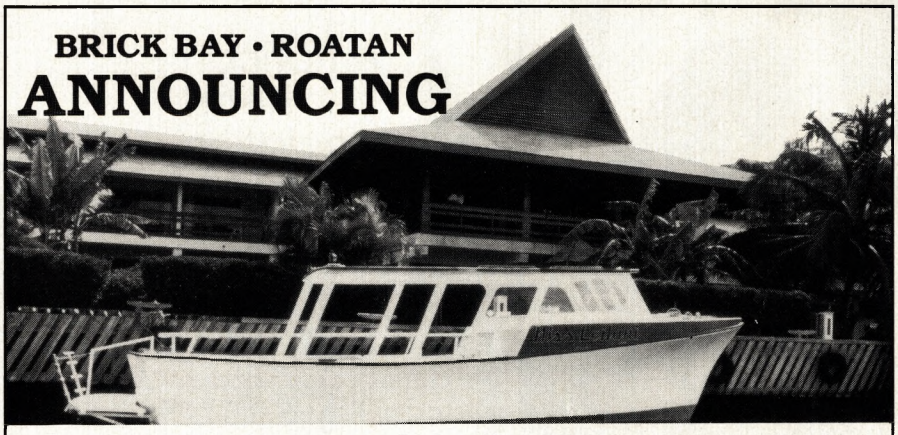
A Canadian company abandoned salvage attempts after two years. September 1944 witnessed the sale of the *Material Service* to a Detroit ship operator, WIIIIam Nicholson, for $3,250. Considered one of the best salvors on the Great Lakes, his efforts also failed, with the weather interfering with all attempts. The wreck was abandoned after that.

The final blow came in the last part of the 1970s, when a group of divers dynamited the wreck's stern. This area contained the engine room and crew quarters and could be penetrated. The divers said they were trying to prevent others from being trapped below decks.

The obvious result of the dynamiting was massive destruction of the stern quarters, large stress cracks in the hull and debris being scattered around the wreck. The sinking caused so little damage that the *Material Service* was consid-



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WRECK FACTS

ered salvageable. The destruction seen today was caused in small part by salvage efforts, primarily by dynamiting.

DIVING THE MATERIAL SERVICE

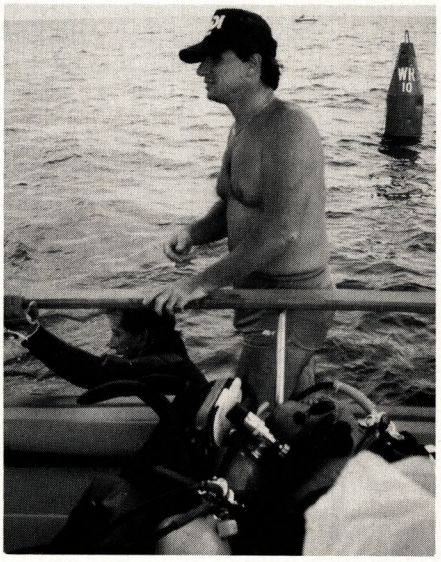
Visiting the *Material Service* is as simple as Lake Michigan diving gets. On the south shore of the lake, it can be easily found on NOAA chart #14927, just northeast of the Calumet Harbor entrance. It is indicated as a wreck and as being marked by buoy WR10. Few realize the wreck lies in Indiana waters.

Since it is so large the *Material Service* is easily located with any depth sounder. It lies upright on a flat, sandy plain, the hull resting in approximately 30 feet of water. Tying off to the can buoy is illegal, but finding a solid anchor point on the wreck is uncomplicated.

The water tends to be choppy, since it is so close to the breakwall, but this turbulence disappears a few feet below the surface. Visibility averages seven feet and the water is comfortable enough for a full wetsuit and reef gloves. Morning dives provide the best visibility.

On one Sunday morning we left Diversey Harbor on Chicago's north side and, heading south, reviewed our dive plans. It is about a 45 minute ride to the wreck site and the Chicago skyline is a constant companion. It was their first time on the MSB for most people on our trip and they were anxious to get in the water. It was my 20th dive on the wreck.

We arrived at the buoy and spotted the wreck on our depth sounder; the hull creating a huge peak on the screen. We dropped anchor and dragged it until it was secure in the wreckage.



My buddy and I performed a seated entry from the platform of the *Quag Diver*, the 24 foot Bayliner belonging to Chicago PADI instructors John Kinnas and Alex Wohn, my dive buddy for today.

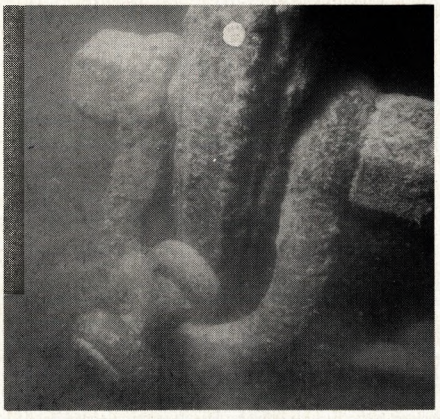
The anchorline pointed the way and the wreck soon materialized from the silt. Visibility was just five feet. As we thought, the anchor had dropped into one of the holds and was nearly in the center of the wreck. Alex signaled toward the stern and we headed that way. There's little need to kick on this wreck, as the many cleats and tarp tie-downs provide excellent pull-alongs.

To our left was the curved side of the barge. On the right we passed the ship's holds, gaping open. Soon we were over the area where the A-frame was attached and passed the hopper remains. In a few moments we arrived at the stern. The damage caused by the dynamiting was everywhere. Exposed pipes, fractured metal and buckled plates abounded.



A roller from the *Service*'s conveyor.

We explored this section, taking some shots through porthole style openings in the ship's side and top. Then we dropped over the stern. The remains of the aft deck and crew's quarters are scattered on the bottom. Surprisingly, the propellers are still in place, albeit half buried in the silty bottom.



The towing connection at the ship's bow.

After a few minutes of examining this area, Alex and I headed toward the bow—this time along the port side—following the convergence of the lake bottom and the ship's hull. To our left, front and back, visibility faded to light green/brown and to the right was the algae covered hull.

We passed over more debris and a few aluminum cans. The bow appeared

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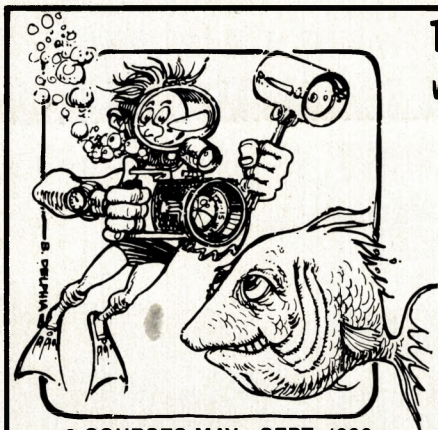
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WRECK FACTS

abruptly, with little contour. Perhaps a foot from the bottom, attached to the ship's nose, is a large towing shackle. After a couple of more photographs here we ascended to the decks and began our exploration of the holds.

The hatch covers are long since gon and the holds make an eerie dive. The openings—about the size of a garage door—are easy to enter. Their bottoms are V-shaped (vvvv), designed to guide cargo to the hidden tunnels. To suppor the decking, I-beams run down the cen ter, between the second and third Vs They are spaced every few feet, fa enough apart so a diver can pass between them. I have shot some fantastic video here, as well as unusual photographs. Little of the cargo remains and this area is very silty.

Since the site is so shallow, a single tank of air lasts more than 40 minutes, just enough time to briefly explore much of the wreck. Some of the most interesting sites are what appear to be parallel railroad tracks running along the center of the ship with steel rollers between them. These are the remains of the conveyor assembly. What appears to be a cart at the track's terminus is actually the hopper. There are also some inviting openings with ladders descending below decks scattered around the ship. These can be entered with tanks removed, but only *experienced* wreck divers, skilled in penetration techniques, should enter. Take care diving this wreck in the early summer, as smelt anchors and fishing lines abound. The *Material Service* is a great "get acquainted" Lake Michigan wreck dive, as it offers much for beginning and experienced divers. Every dive offers a new sight, unusual find and great photo opportunities.

No Chicago scuba experience is complete without a dive on the *Material Service* barge, a visit to a unique portion of Chicago history.

Note: Information for this article was gathered from numerous sources, including the National Archives in Chicago, the Milwaukee Central Library, Admiral Sobel at the Material Service Company and various 1936 newspapers.

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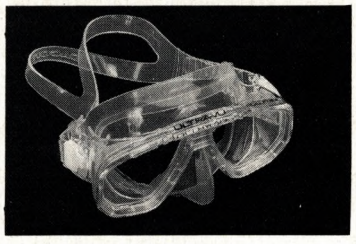
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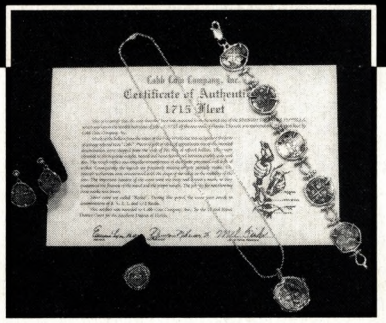
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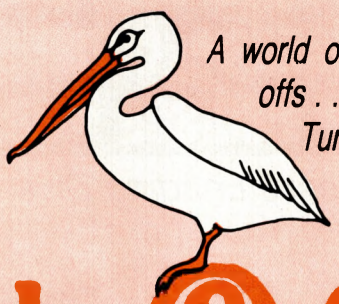
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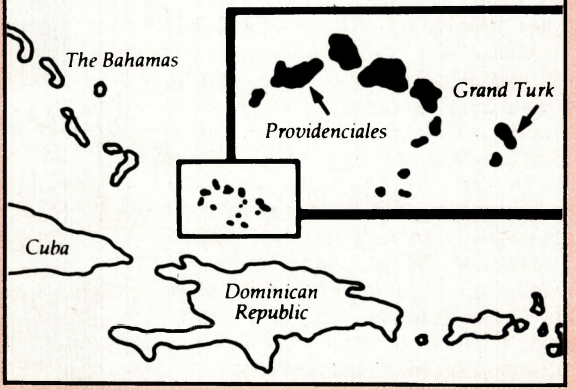
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DIVING MEDICINE

(Continued from Page 30)

the age of 40, you should have a periodic stress test to be sure that exercise is safe. A normal exercise test to your maximum capacity, although not a lifetime guarantee against coronary disease, does indicate you can withstand the exercise and other stresses involved with diving. An abnormal test suggests you could be at risk for a heart problem while diving

Prevention is still your most important choice for long term health and diving. Prevention involves a commitment to good health and avoidance of obvious deleterious habits. Your family history is a clue you may be at risk for coronary heart disease. If a member of your immediate family (parent, brother or sister) had a heart attack before the age of 55, you are likely to be at increased risk yourself. You should, under any circumstances, have your blood lipids (cholesterol, triglycerides, HDL, LDL) measured. If they are abnormal, you need advice on getting them back to normal. Cholesterol should be less than 200, triglycerides should be less than 120, HDL should be less than 130. If your blood lipids are not in these ranges, you should lose weight, reduce your saturated fat intake, reduce your alcohol intake and exercise. If all else fails, there are several medications that will reduce your blood lipids to acceptable levels. A physician should prescribe lipid lowering medications to minimize any side effects from these drugs.

The most serious risk factor is cigarette smoking. If you smoke, stop. This holds for women as well as men.

Exercise moderately. There is compelling evidence that exercise contributes to lowered risk for heart attack. Exercise helps maintain normal blood pressure, helps in weight reduction and raises the HDL component of cholesterol, a risk lowering change.

Be sure your blood pressure is normal. This requires a check of blood pressure periodically. A physician or nurse can check your pressure and provide you with the values. If pressure is elevated, you should be treated.

DIVING WITH HEART DISEASE

Most people with coronary heart disease should not dive. Usually, there are blocked arteries that limit oxygen delivery to the heart during exercise. This will increase risk for a heart attack or sudden death while diving. Exceptions to this rule can be made in some cases. If only one or two arteries were narrowed and bypass surgery or balloon angioplasty has totally corrected the problem and an exercise test is normal, then you might return to diving in warm water where heavy exercise will not be required. If you have had extensive heart muscle damage from a heart attack, you should not dive.



The Birth Of A Swell Shark

Any diver who has spent much time exploring the rocky reefs of southern and central California has probably found the six inch long eggs of the swell shark, *Cephaloscyllium ventriosum*, tangled in algae or securely wedged in the stony bottom. This underwater curiosity represents one of the most fascinating aspects of shark biology—reproduction.

Like most designs of nature, swell shark eggs are well suited for their purpose. The shell or egg case is composed of a collagen compound that is very tough and resembles one of our modern plastics. Both the brownish-green color and stony shape provide excellent camouflage. And the wiry, corkscrew-like tendrils protruding from one end easily entangle in growth or rocks, keeping the egg secure and hidden. The end opposite the tendrils has small slits on either side that open and allow an easy exit for the hatching shark, but stay tightly shut during development to keep out predators and parasites. However, water passes through this end of the egg case. It is circulated in and out mainly by the embryo's movements.

Eggs produced by swell sharks in Channel Islands waters differ slightly from those found off the mainland. Island eggs are equipped with short, hook-like projections instead of long tendrils. This is quite interesting and suggests two major points. First, swell sharks in the islands



Top: Inside a swell shark egg case, the developing embryo is attached to its round yolk sac. Above: A swell shark egg case.

TEXT AND PHOTOGRAPHY BY CHIP MATHESON

must have been isolated from their mainland dwelling counterparts for thousands of years, probably by the great distances and depths, as they are not known to make long pelagic journeys. Second, eggs in the Channel Islands must be subjected to different environmental conditions than those on the mainland, thus causing this divergence of design.

Each egg contains only one embryo, which is attached to a round yolk sac. This yolk sac is the shark's only source of nourishment during development. Surrounding and protecting the yolk and embryo is a gelatinous substance of unknown composition. About halfway through development this substance disappears and is replaced by seawater

The gestation period is up to one year, depending on water temperature.

When the egg is first laid all that is visible to the naked eye is the yolk. If the egg is fertilized, the embryo will appear in about one month as a small, wiggling thread. By two to three months this "thread" will have developed into a bizarre but somewhat recognizable replica of a shark. At this point the gills first appear as small wavy fibers, projecting from each side of the shark's head. The eyes are visible as small, dark spots. At about four to five months all fins are easily visible and the gill slits and mouth begin to appear. During the next four months the external gills disappear and the gill slits, fins and mouth become well defined. The yolk sac has shrunk appreciably from its former size. About ten months into gestation most of the external features have reached their final stage of development. From this point on the yolk sac quickly disappears and the embryo grows until it fills the egg case. Now it is ready to emerge.

Usually, hatching will not occur until the yolk is completely gone, so hunger is thought to be the motivating force. Whatever the reason, the shark wastes no time. Aided by the two slits on the end of the egg case, and a shell softening compound secreted by a small gland on its head, the shark squirms and wiggles its way out. Rows of extra large, back

mounted scales catch on the egg case and prevent reverse slippage as the shark emerges. The hatching takes only about ten minutes and probably occurs at night to help hide the seven inch long shark from predators.

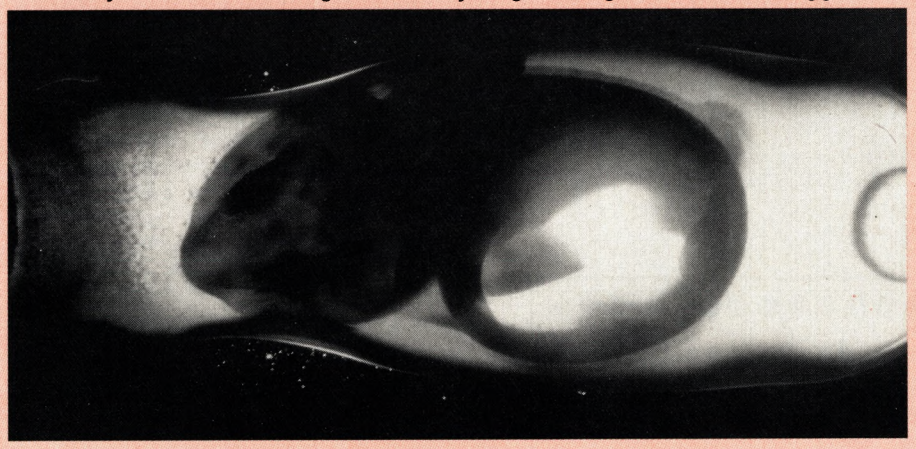
Once in the clear the shark is fully able to fend for itself, and usually disappears into the rocks or kelp to hide and forage for food.

Most species of sharks are not egg layers, but give birth to fully developed, free swimming young. These live bearers can be divided into two groups: The ovoviviparous sharks and the viviparous sharks. In ovoviviparous sharks, the fetus develops inside the mother's uterus, but receives most of its nutrition from its own yolk sac. In viviparous sharks, the fetus also develops inside the uterus, but in this case it receives all nourishment from the mother by way of a placenta and umbilical cord. This may sound like a new discovery, but it was first observed in sharks by Aristotle.

As the small swell shark grows inside the egg case, the yolk sac shrinks.



This baby swell shark has grown nearly large enough to leave the egg case.



After the end of the egg case is weakened by secretions, the shark breaks free.



The egg laying, or oviparous, sharks are similar to the ovoviviparous sharks because the embryo receives no nutrition from the mother. But, in this group the embryo is encased and extruded into the ocean, where it develops completely independent of the mother. Swell sharks are in this category.

Other egg laying sharks include: horn sharks, *Heterodontus francisci*; spotted dogfish, *Scyliorhinus* sp.; and the whale shark, *Rhincodon typus*. The whale shark has the largest egg of all, which makes sense, because it is the largest nonextinct shark. Only one was ever found. It was brought up from 186 feet in the Gulf of Mexico and measured 12 by 5½ inches.

Swell sharks become sexually mature at an unknown age. An actual mating has never been observed, but this behavior is probably like that of similar species—the male shark seizes the female's pectoral fin with his mouth, wraps his body over and around hers and copulation occurs. The process lasts about 30 minutes.

After fertilization the egg is encased in its shell in an area known as the shell gland. The completed egg passes through the uterus then to the outside world. Four or more eggs may be produced and deposited at one time.

It is thought that the female shark selects a protected spot to lay her eggs, perhaps among bottom vegetation or in a rocky crevice.

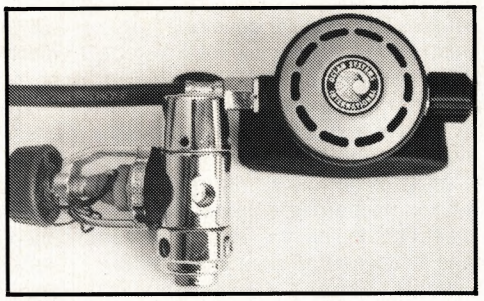
Female swell sharks can store sperm internally for long periods and fertilize eggs whenever conditions merit. At the Cabrillo Marine Museum in San Pedro, California, captive female swell sharks have produced fertile eggs after being isolated from male sharks for 12 months.

Swell sharks are members of the family Scyliorhinidae, which also includes cat sharks. They are small inoffensive creatures that inhabit coastal rocky caves and crevices from about 30 to 1,400 feet. Their range is from Chile to central California and maximum length is about three and a half feet. Swell sharks are nocturnal feeders that use needle sharp teeth to snap up small fish, such as blacksmith (*Chromis punctipinnis*), caught napping in the rocky reef. During the day swell sharks are usually found sleeping in holes or caves.

Swell sharks are not considered dangerous and when disturbed they will usually try to escape. However, when picked up they will attempt to bite and are capable of delivering a painful nip to the careless diver. Predators of swell sharks include sea lions and elephant seals.

All in all, the swell shark is a fascinating, but often overlooked, member of that highly diverse group of sea creatures known as sharks.

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LA CEIBA/DEL MAR AQUATICS

(Continued from Page 80)

made this area their home. Actually, they are responding to handouts from divemasters who constantly feed them. The groupers are so large they should be fed only by the divemasters to prevent injury. Follow your divemaster along and look for an opportunity to photo or video a close encounter of the marine kind.

Recently, Del Mar Aquatics showed me a new and wonderful dive site along the southern end of Cozumel. The huge reef, between **Colombia** and **Maracaibo Reefs**, is known as **Punta Sur**. You won't find it on the charts, but it is most interesting. Punta Sur is a grove of huge popcorn shaped, skyscraper sized coral heads protruding from a deep sand slope. The mountainous corals create channels, tunnels and swim-throughs that provide meandering trails for divers to follow. The huge, irregular heads are decorated with a plumage of sponges, fans and black corals. Marine life is excellent, with schools of grunts and yellowtails and pairs of lovely French and queen angelfish. As with most of Cozumel's deep reefs, there is always the possibility of a school of amberjack and, occasionally, a blacktip shark or eagle ray.

An excellent second dive is **Yocab Reef**. This area is well suited for wide angle or close-up photography with excellent opportunities for handsome fish portraits. Easily found are angelfish, triggerfish, scrawled filefish, trumpetfish, spotted morays, rock beauties and small barracuda. The numerous low-lying coral heads are coated with a museum of sponges and a dazzling display of soft corals and gorgonians. Yocab is a colorful reef, displaying a prominence of pink, yellow and orange hues.

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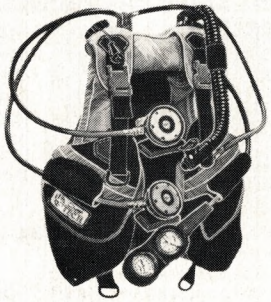
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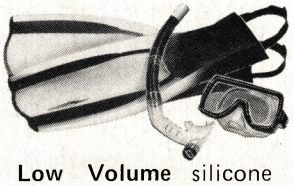
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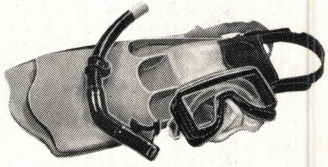
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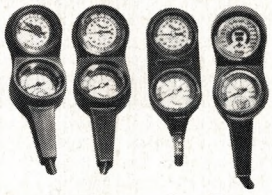
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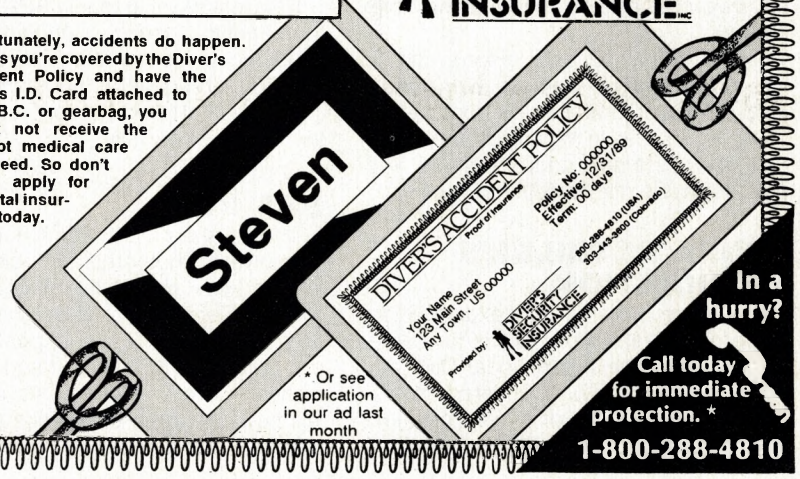
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TROPICAL ADVENTURES MOVES

Tropical Adventures Travel, one of North America's oldest and largest dive travel specialists, has recently moved. The new, 3,000 square foot offices are near the foot of Seattle's Space Needle, overlooking beautiful Puget Sound and the Olympic Mountains.

With a staff of 12, Tropical Adventures is fully equipped with seven Sabre airline computers (the world's largest), three PCs with 100 megabytes of storage, eight toll free phone lines, international telex and fax.

Representing 62 dive resorts and 35 live-aboard dive vessels worldwide, Tropical Adventures can be contacted at (800) 247-3483; in Washington at (206) 441-3483. The new address is 111 Second North, Seattle, WA 98109.

SCUBA RETAILER'S ASSOCIATION

Dive store owners from Texas, Florida, California, Washington, Illinois and other states met at the International Dive and Travel Show (IDTS) sponsored by the Florida Association of Dive Operators (FADO) to create the Scuba Retailers Association (SRA). The SRA is a non-profit corporation formed by dive store owners for dive store owners. An interim board of directors has been created from the various regions of the United States until a permanent board can be elected by the member-owned organization. Bob Holston, a retailer from Key West, Florida, has been temporarily appointed executive director.

Ron Hardy, a retailer from Panama City Beach, Florida who is serving on the board, has prepared a list of objectives. Anyone interested in obtaining this list may write or call the SRA office, currently at 1605 North Roosevelt Boulevard, Key West, Florida 33040; (305) 296-0540.

Retailers wishing to join SRA and enjoy the benefits of being a founding member should contact the SRA offices for details. The first general membership meeting will be held in Orlando, Florida during the DEMA Show.

SEA 90

The Northern California Chapter of the Underwater Photographic Society is hosting its 26th annual International Photographic Competition. There will be more than 50 awards for slides, prints and videos entered in 15 amateur and open divisions. Award winning prints and slides will be shown and the names of the winners of each category will be presented at the Sea 90 International Underwater Film Festival in Oakland, California on March 24. In addition, winning prints will be displayed at the Tradeshow and video winners will be presented in one of the seminars at the Seaviews 90 Underwater Symposium in Oakland, California, March 24 and 25. Major prizes, including a complete drysuit donated by O.S. Systems, will be given to the best of show for both amateur and open divisions.

Entries must be received by February 18. For rules, competition entry blanks and more information contact Bambi Barry, Competition Director, 4955 Boxer Blvd., Concord, CA 94521; (415) 680-0142. The address for competition entries is Suite 331, 5100—1B Clayton Road, Concord, CA 94521.

SEE & SEA TRAVEL BROCHURE

See & Sea Travel has released its 25th anniversary brochure, containing the world's most exciting diving adventures. From great white sharks off South Australia to a new grand tour of the Red Sea, this brochure presents the crown jewel locations of exotic dive travel.

For your copy, contact See & Sea Travel, Inc., 50 Francisco Street, Suite 205, San Francisco, California 94133; telephone (415) 434-3400, telex 278036 SEASUR, fax (415) 434-3409.

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Package 3A: Nikonos V (w/battery & spare o-rings), 35mm f2.5 UWN, Speedlight SB-103 (w/arm, tray, sync cord, diffuser, case & spare o-rings) & equipment case (18x13x8") w/foam 925.00**
Package 4A: Nikonos V (w/battery & spare o-rings), 35mm f2.5 UWN, Aquaflash 28 TTL (w/arm, tray, TTL sync cord, remote sensor w/slave, diffuser (15mm) & spare o-rings) dive light, light mount & equipment case (18x13x8") w/foam 989.00**
Package 5A: Nikonos V (w/battery & spare o-rings), 35mm f2.5 UWN, Sea & Sea YS-50TTL (w/arm, tray & sync cord) & equipment case (18x13x8") w/foam 849.00**

HELIX/SONY DEMO CCD-M9 VIDEO-8 OUTFIT

These are demonstrator models refurbished by Sony and include the CCD-M8 Sony 8mm Handycam camcorder with 2/3" CCD imaging sensor and flying erase head, Handycam sports shell (an all weather compact shell for surface use only, not an underwater housing), the EV-C3 recorder/player with flying erase head, control L output, record up to 2 hours on P6-120 video cassette. Also included are a charger, nicad battery, and an RF adapter. These outfits include new equipment warranties from Sony of America, 90 days labor and 1 year parts.

These Sony-8 outfits are only sold complete with a new housing, as listed below. All prices include the complete Sony Video-8 outfit described above and a new uinderwater video housing.

New! EWA UW flexible housing, w/ flat port, rated to 30' 1049.00*
New! Ikelite #6030.3 housing w/dome port & W.A. lens adapter, rated to 150'. Includes start/stop & distance/white balance controls plus double-contour leadhandgrips 1399.00*
New! Aquavision Capsule 10 housing rated to 250'. Features single control (on/off), wide lens adapter (94°), hydro microphone, andrighthand contoured grip 1649.00*
New! Pro-Line aluminum housing w/dome port, wide angle adapter, rated to 325' 1699.00*

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HUP-124 • Master set w/3 tubes and 6 framers (1:1.8, 1:2.75 f/28mm UWN; 2:1; 1:1, 1:2, 1:3 f/ 35mm UWN) 154.00
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Twin reflectors provides coverage to 28mm lenses (or 15mm with optional diffuser). It has a guide number of 32 at ISO 100 (in feet) underwater. Operates in TTL mode with the Nikonos V, in full auto exposure control with Nikonos III/IV cameras, and in manual control with full and 1/4 power settings. TTL auto sensor with built-in slave mounts on the Nikonos accessory shoe. Thyristor circuitry. Req. 6 AA batteries (not included). Recycles in .5 to 10 seconds with fresh batteries, and gives 80 to 300 flashes. The flash includes TTL auto slave sensor, dedicated sync cable, camera mount ing bracket and arm, wide angle adapter, spare o-rings, and grease. 12040 • Aqua F-5TTL 449.00*

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53410 • K-133 Flashlight w/spare halogen lamp 37.00

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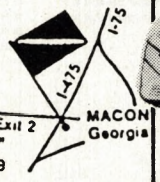


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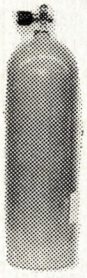
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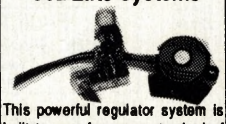


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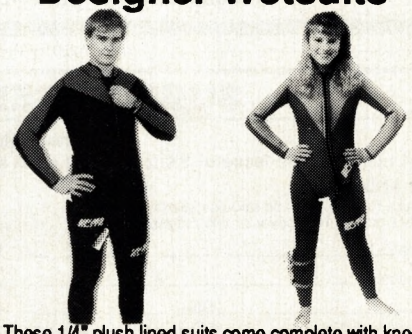
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For a trial period of six months, Aquanaut Cruise Line will offer alternating weekly departures for non-smokers. "With fewer and fewer passengers smoking aboard our ships, we decided to follow the trend and prohibit all smoking within the ships; that is, in all cabins and public rooms," explained Captain Eric Heindl. The demand for no-smoking accommodations and the prevention of secondary smoke exposure has been growing rapidly, particularly in the United States. All Aquanaut ships now will allow smoking only on deck in the open where no companion passengers will be affected. All crew members aboard any vessel in Aquanaut's fleet are non-smokers and have been for some time.

Aside from the health implications, particularly to scuba divers, there is a potential fire hazard with smoking. A careless match or a poorly discarded cigarette in a stateroom can start a fire.

Aquanaut Cruise Line operates diving and watersports oriented cruises in the Caribbean and Mediterranean. Sites in Belize, the British Virgin Islands, Saba and St. Maarten, the Grenadines and the Adriatic are visited weekly by the fleet of five vessels: the *Aquanaut Ambasador*, *Aquanaut Holiday*, *Aquanaut Explorer*, *Coral Star* and *Coral Bay*.

For further information call (800) 327-8223 or, in Florida (800) 432-8894.

NEW HYDROSPACE DIVE SHOP

A new Hydrospace Dive Shop has opened on the beach at the foot of the Hathaway Bridge next to the Bridge Tender restaurant in Panama City, Florida. The 3,000 square foot facility houses a repair department, large classroom space, retail sales and rental gear. Two dive boats operate out of this shop, the 42 foot *Bayou Runner* and the 48 foot *Captain Scuba 2*.

The new Hydrospace shop is at 6400 West Highway 98, Panama City Beach, Florida 32408 and the phone number is (904) 234-3063.

SSI/UCSD TRAINING FACILITY

Scuba Schools International has established a new instructor training facility at the University of California, San Diego. Conceived and constructed through the mutual input of San Diego SSI members and UCSD educators, and the unmet demand for competent and mobile instructors, a leadership development program has evolved and gained quick success. This comprehensive, collegiate-credit

course combines academic knowledge, practical dive leadership skills and orientation of the intricacies and operations of a retail dive store to prepare students for instructor status.

One course offered through UCSD is Dive Control Specialist, which requires students to meet for eight lectures, three pool sessions and seven ocean dives. The Instructor Training Course (ITC) requires 15 lectures, eight ocean dives and seven pool sessions. Students are also required to give two presentations on a variety of dive related topics. At the completion of the ITC, the candidate will have observed and/or participated in at least three separate open water courses.

ITC students must also complete an intern program at a San Diego SSI store to gain practical knowledge of the flow and management of customer traffic, displays and the psychology of sales, gross profit/loss analysis, wholesale/manufacturer sales, instructional programs, rental programs, repair programs, personnel responsibilities and the role of a dive instructor in retail sales.

The success of the SSI program has led to the inclusion of courses to be taught in future months. The Instructor Training Course Part I (associate instructor) will be taught during the winter of 1990, starting the second week of January and the Instructor Training Course Part II (open water instructor and evaluation), will be taught during the spring of 1990, beginning in April.

The UCSD Summer Scuba Program is currently offering open water, advanced open water, boat diver and sea resources courses. In the summer of 1990, the addition of an underwater photography program headed by Chuck Nicklin, a law enforcement program, a divecon course and an ITC course will expand the program, making the 1990 Summer Scuba Program the most comprehensive offered at an educational institution.

More information concerning the UCSD Scuba Program can be obtained by calling Burt Kobayashi, UCSD (619) 534-2916 or by correspondence to C-D017, UCSD, La Jolla, CA 92093.

DAVID FRIEDLAND MOVIE

According to David Friedland, a movie will be made of his life by Guber-Peters, the producers of major motion pictures such as *Rainman* and *Batman*. Friedland is the former New Jersey senator and lawyer who became "America's number 1 most wanted fugitive" after he disappeared in a faked accidental diving death off the Bahamas. After the faked death, he led Interpol, the FBI and federal marshalls on a chase around the world and ended up living at a dive resort in the Maldives for one and a half years.

David Friedland is currently residing at the federal correctional institution at Raybrook, New York.

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LAHAINA DIVERS

(Continued from Page 60)

are available on all dives as well.

Upon checking in, customers show the required proof of certification, then their equipment is taken to the boats by the staff. From there it is a short walk to the harbor. Dive charters are conducted aboard either of two spacious, custom built dive boats. Don't let their size fool you, they were designed for speed as well as comfort.

Channel crossings to Lanai and Molokini Crater usually take about an hour. It's a time when customers can relax, get to know one another, enjoy some coffee and French pastries or marvel at the breathtaking scenery of West Maui. It is also a chance to experience some unusual encounters with Hawaii's marine life. During the winter season humpback whales turn the transit times into impromptu whale watching trips, very often providing close encounters. Dolphins often escort dive boats by riding their bow wakes, and during last season, on a charter to Lanai, one of Lahaina Divers' boats got to stop in mid-channel and offload everyone to snorkel with and ride two manta rays for more than 30 minutes.

Regardless of the huge investment it has in boats and equipment, Lahaina Divers places its greatest priority on people. Operations manager Kim Irving-Roberts says, "We have built our staff around the philosophy they are living the fantasy most people dream about. We want our customers and staff to have fun together, safely."

The staff utilizes transit times to set up customers' equipment, lay out the weightbelts and get to know the people's backgrounds and qualifications through informal chat and interview. Once at the site, a thorough briefing is given about the dive procedures, water conditions and marine life expected to be encountered. I encourage divers new to Hawaii to stay close to the guides. They dive these sites every day and have an intimate knowledge of the critters' whereabouts and behavior. Otherwise you are allowed to break off with your dive buddy and conduct your own exploration.

The 50 foot *Endeavor* was built in July of 1988 with twin diesels that deliver a combined 900 horsepower that can propel the craft at 20 knots. U.S. Coast Guard certified to carry 49 passengers, Lahaina Divers limits the number to 25. *Reliant*, its 43 foot sister ship, has gear storage beneath the bench seats. It has spacious decks and passenger limits are normally held to 18. *Reliant* can cruise at 18 knots as well. Both boats have a large enclosed cabin area, an onboard marine head, freshwater shower and a freshwater rinse bucket for customer convenience. Transitions to the dive site are enhanced by the wide doors opening to sur-

face level swim platforms, while two large aluminum boarding ladders make the climb out of the water relatively effortless.

After the dives, fruit and veggies are available on all of the two tank charters, and a picnic lunch is provided for the three tank trips.

Lahaina Divers conducts night dives on Thursday evenings. This local dive is ideal for spotting eels, lobster, crabs, shells and a species known as night octopus. It is also a great opportunity to photograph those elusive daytime fish, mesmerized by a diver's light at night.

PACKAGES

Lahaina Divers has joined forces with two hotels on Maui and Dollar Rent A Car to provide customers with a total package plan.

The Maui Islander Hotel is part of the standard package. Though not on the waterfront, the Islander's central Lahaina location places it within walking distance of several great restaurants, a myriad of shops, the boat harbor and Lahaina Divers' retail store.

For more upscale accommodations, the Maui Marriot is a deluxe hotel at the Kaanapali Resort, four miles north of Lahaina. This beautiful beachfront property has shopping and restaurants on the hotel's grounds and Whaler's Village shopping center is only a couple of minutes' walk away.

Lahaina Diver's package number one includes: accommodations for seven days/six nights, car rental and three, two tank interisland boat trips. Package number two includes accommodations for eight days/seven nights, car rental, five, two tank interisland boat trips and one night dive. Packages start at $499 and are flexible to allow for upgrades and modifications to cater to individual needs. I strongly recommend making reservations well in advance, especially if you are planning to travel here around the holidays or during the summer.

Lahaina Divers offers a complete spectrum of classes through instructor level and specialties include Hawaiian research, marine awareness, deep, boat and night diving. A PADI Five Star IDC training facility, it is also affiliated with NAUI and SSI. Mainland trainees who just need open water dives to complete certification can do so through referral service. Introductory classes are available for people who have never tried the sport, but wish to experience the underwater marvels Hawaii has to offer.

Lahaina Divers' commitment to marine ecology goes hand in hand with its proven track record of quality service to the dive community, setting a standard that every charter service, regardless of location, should strive for.

If you are interested in learning more about Lahaina Divers, or in making reservations, call (800) 657-7885 or (808) 667-7496 (locally). You can fax (808) 661-5195 or write to 162 Lahainaluna Road, Lahaina, Maui, HI 96761.

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Height _____ Weight_____
Ankle _____
Calf _____
Knee _____
Thigh _____
Hips _____
Waist _____
Chest _____
Bra & Cup size _____
Neck _____
Wrist _____
Forearm _____
Elbow _____
Biceps _____
Wrist to Elbow _____
Wrist to Armpit _____
Ankle to Knee _____
Ankle to Crotch _____
Ankle to Waist _____
Shoulder to Waist _____
Shoulder Seam to Crotch _____
Ankle to Shoulder Seam _____
Head Circumference_____ (Shown with options)

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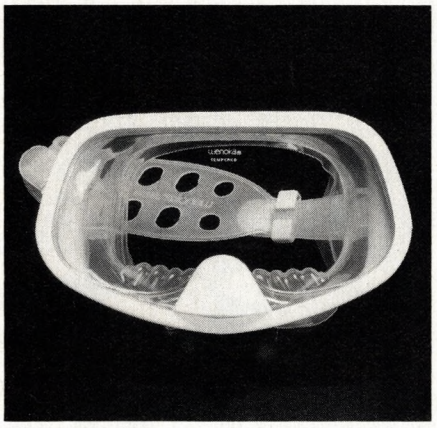
(Continued from Page 29)

is not at all obtrusive. If you've never used a mask with this feature, try it, you just might like it! Those who dislike purges can install a separate plug that comes with the mask and makes the purge inoperable.



SeaStyle Mini-Cabrilla

The Opti-Purge comes in seven frame colors, all of which have clear silicone skirts and straps. It has the same strap and buckles found on the other Wenoka SeaStyle masks.



Seastyle Opti-Purge

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EVERY MONTH IN skin diver



I LEARNED ABOUT DIVING FROM THAT

The $4000 SEA URCHIN SPINE

BY PAUL DOOSE



photos/Bonnie J. Cardone

As our author found out, a puncture by the spine of a sea urchin can be a very painful experience—in more ways than one!

Everyone who has been on a lobster dive in Southern California waters has come in contact with sea urchins. Lobster seem to hide behind them. I've had urchin spines in my hands before. They went right through my glove and their brittle nature caused them to break off. Sometimes when this happens the tip left in the flesh will fester and come out; other times it works in and has to be surgically removed.

On a dive at San Nicolas Island in November 1987, the weather was great—sunny, calm sea and good visibility—and I found a nice hole with three good sized bugs. Before they could back up out of reach, I made a quick grab and, in the scramble, got the largest one. After stuffing it in my bag I discovered the lobster was not the only thing I got. There were two urchin spines in the little finger of my left hand. I pulled them out and went looking for more bugs.

We made four more dives that day. As we cruised back to San Pedro, I realized my finger was a little sore. I soaked it in hot water and I hoped I had gotten all of the spines out.

A few days later the finger was inflamed and festering. A small piece of spine eventually worked its way to the surface. I thought my problem was over. No luck: My finger was still inflamed a week later. I went to a doctor and he gave me some antibiotics to localize the infection. He made an appointment for me to come back a few days later so he could lance the finger and clean it out. As the infection was in the joint and close to the bone he recommended I see an infectious disease specialist. The specialist took a culture and prescribed a strong antibiotic. The culture was inconclusive and the antibiotics were continued. My first visit with the specialist was on December 10, I continued to see him until March 10. On the last visit, the first joint of the finger was still inflamed. X-rays taken at that time showed the bones in the knuckle were sloughing off.

I was in Hawaii on vacation throughout May and June and put up with a very sore finger. I still got in some diving, however.

Shortly after I returned home another small piece of urchin spine came out a little distance from the point of entry. I thought maybe things would clear up now. No! The finger was still red and swollen a few weeks later. An X-ray showed the joint had disintegrated some more. My doctor now recommended a bone specialist. The new doctor said surgery was needed as the joint problem would not correct itself. Since he was going on vacation for two weeks and I had promised to go with my 12 year old granddaughter on her scuba check out dives, the operation was not scheduled until September 20.

The operation confirmed the joint was gone. The ends of the bones were cleaned and held together with two stainless steel pins. It was hoped the knuckle would fuse to form a stiff joint at about a 30 degree angle. A culture was taken, which later showed no infection. A little crystalline substance was found but no urchin spine.

The worst part of all this was I had to miss the opening of lobster season. A long six weeks after the operation, the pins were removed. An X-ray showed that although the bones had not fused they had formed a flexible type of joint.

One year passed and the episode should have been resolved. Well, not quite. Early in December 1988 a dark spot began moving out under the fingernail of my little finger, near the left side. By December 12 it had moved far enough so that the nail could be cut and the spot removed. It turned out to be a small piece of urchin spine. It had traveled three-quarters of an inch—from the joint to near the end of the finger. The path it followed was close to one of the steel pins.

My final visit to the doctor was January 9, 1989. Almost 14 months had passed. The finger was about one-half inch shorter and the joint was still tender. It did not have full movement and would never be the same.

Now comes the bottom line. Besides the soreness, discomfort and aggravation (not to mention missing the opening of lobster season) there were the medical expenses. When I totaled the bills they came to $4,654.53, making the lobster caught on the dive that caused this trouble *very* expensive.

What did I learn from all this? My next urchin spine will be removed, within a few days, completely and by a doctor if necessary—one who knows about sea urchins and is familiar with marine animals, preferably the diver himself.

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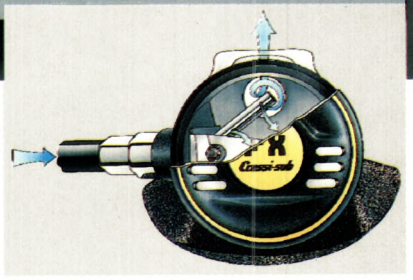
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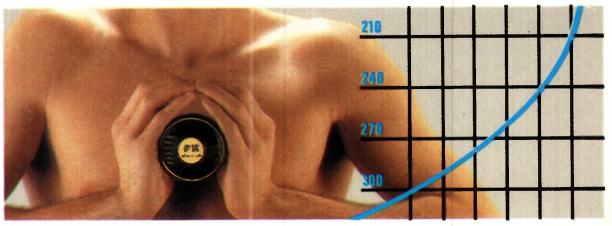


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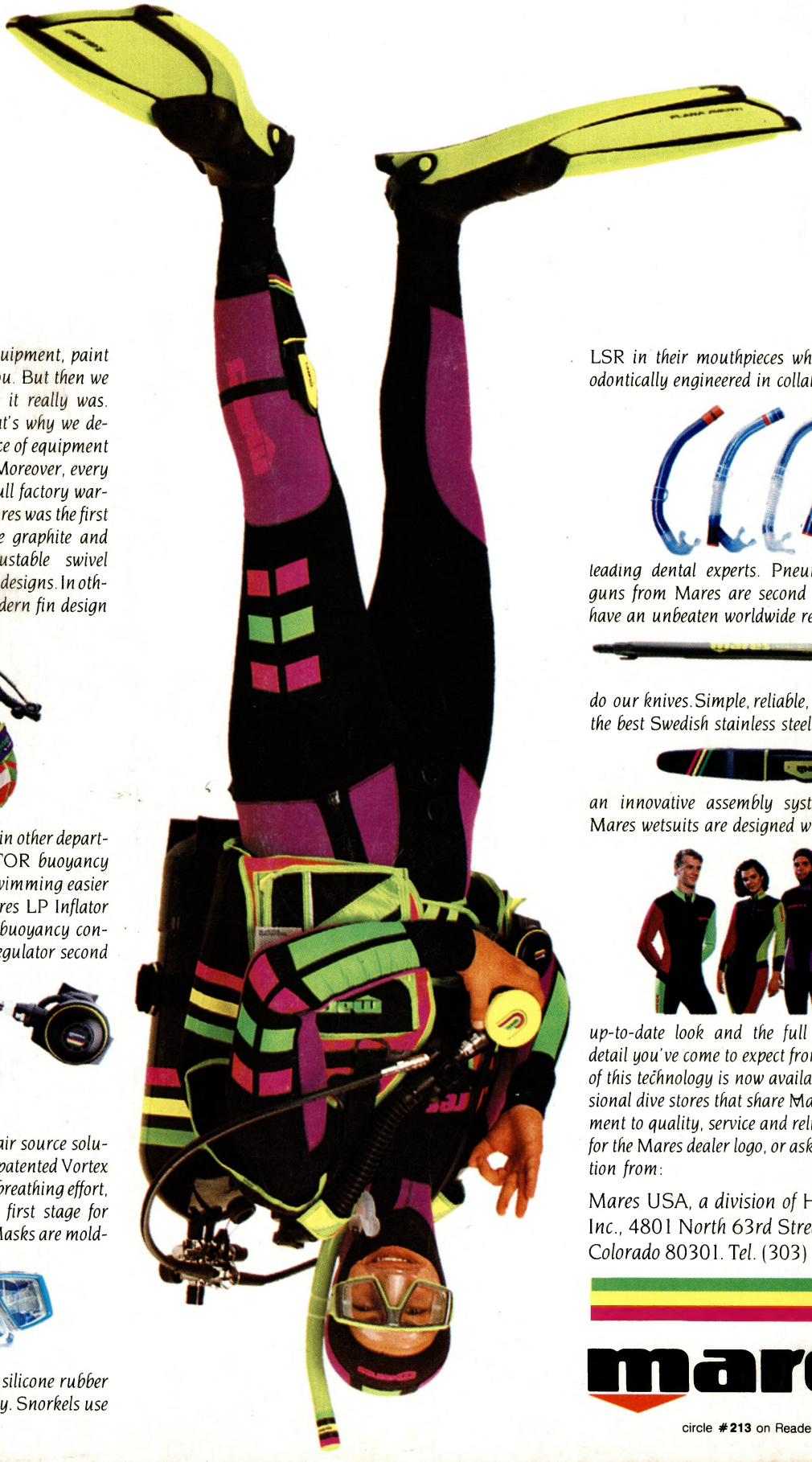
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